Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

VOLUME VII.] NEW-YORK, JUNE 26, 1852. [NUMBER 41.

THE
Scientific American,
CIRCULATION 16,000.
PUBLISHED WEEKLY
At 128 Fulton street, N. Y., (Sun Buildings)
BY MUNN & COMPANY.

Hotchkiss & Co., Boston.
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RAIL-ROAD NEWS.

Railroad Car Axles.

A correspondent of the American Railway Times, in a long communication, discusses the question, "what is the cause of the breaking of railway car axles." He presents totally different views from those which appeared in the Journal of Commerce, by a correspondent, a few weeks ago. The following are the causes which he believes tend to break the axles of cars:—

First—The wheels are attached to the axles at unequal distances apart. I have found the extreme distances to equal fully three-fourths of an inch. Second—The guard rails which are placed opposite points of the frogs, for preventing the wheels from taking the wrong direction as they pass through them, I have frequently seen so placed that the distance between the scores in the frogs and the guard rails is an inch or more greater than the distance between the wheels which pass them; of course the base of the wheels, or rather that portion of the wheels which rest upon the rails at the moment of passing, must be spread that amount, and the axle must bend sufficiently to correspond therewith or be broken. So forcibly are these guards operated upon by the wheels as they pass them, that large spikes are found to be insufficient to keep them in their place, and the repairers find it necessary to place pieces of planks or joists, in the form of struts or braces, between them and the frogs to prevent them from being pinched towards each other."

Rochester and Niagara Falls Railroad.

The railroad from Rochester to Lockport and Niagara Falls, is completed; it is believed that it will be in very active operation next month. This is a very important railroad; hitherto there has been no railroad direct to Niagara Falls from the East. To get there, visitors had to take the round-about road by Buffalo, and come away backwards about fifteen miles. It is true, they could go by the canal to Lockport, at the slow pace of some old line boat, and then take the cars, and "sail like a snail" on the miserable old railroad from that place to the Falls. All this will soon be changed; passengers will steam it right through without winding round and round by Buffalo and Schlossar's Mill—so famous in story. It passes through a beautiful and fertile country, the garden of our State, and visitors will be able to go to the Falls from New York city in about 16 hours.

Dilatory Telegraph.

Smith Pyne complains, in a letter in the Washington "Republic," of the shameful delay of two messages which were sent to him by telegraph. One was an account of his sister's death: it was received by him one hour and a half after it was sent through, and an hour too late for the cars to take him away that evening; it was a shame.

A short time ago Dr. Jackson administered a pound and a half of ether to a lion, at South Boston, Mass., and removed his claws during the twenty minutes the animal was insensible.

SANDER'S IMPROVED GRAIN DRILL.---Fig. 1.

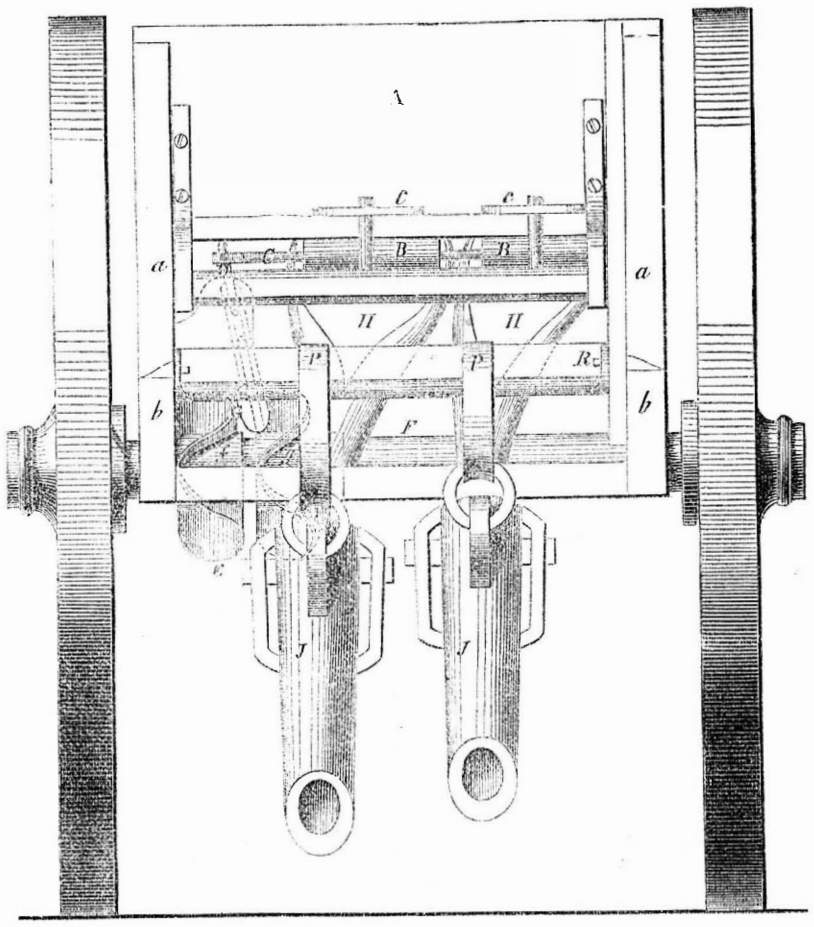

Figure 2.

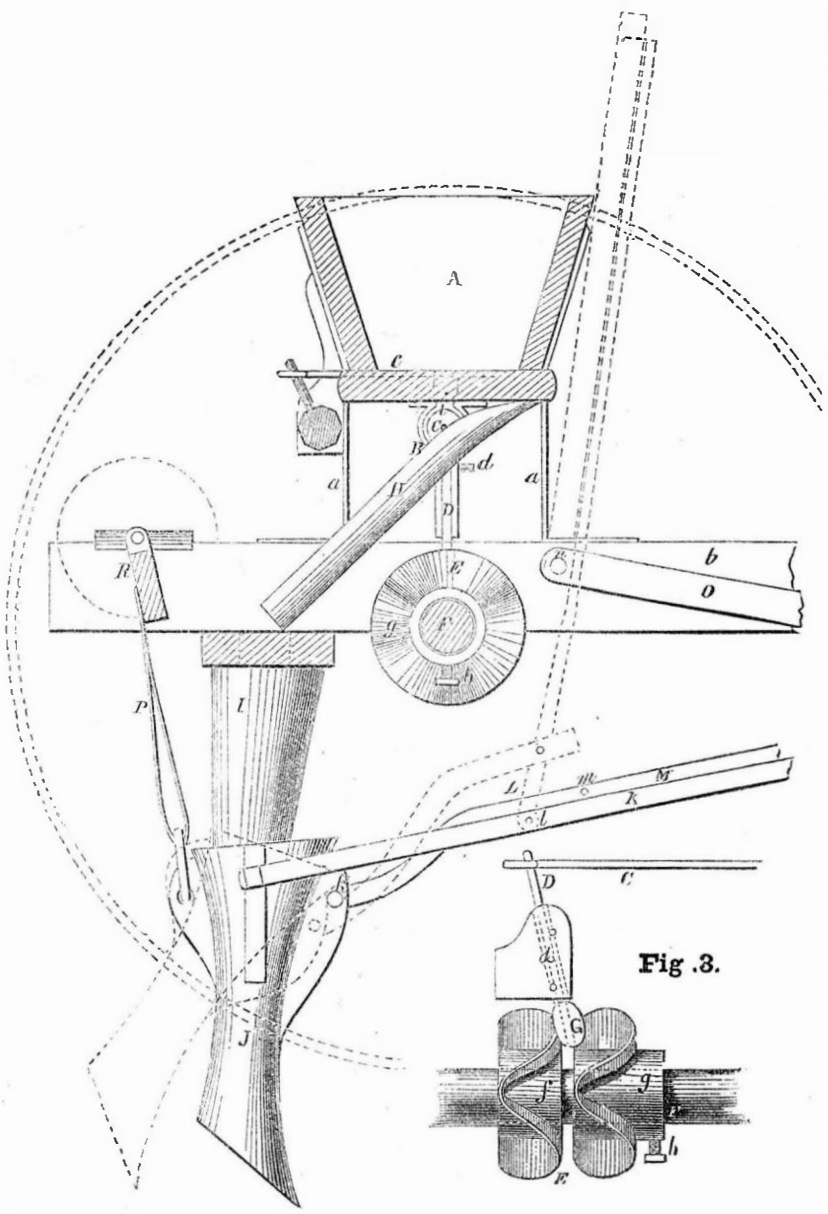

Fig .3.

The accompanying engravings are views of an improved Grain Drill, patented by Benjamin D. Sanders, of Holiday's Cove, Brooke Co., Va. Figure 1 is a back view of the Drill in elevation; figure 2 is a longitudinal vertical section, taken at the middle of fig. 1. Fig. 3 is a section showing the cam which operates upon the lever that works the shove rod. The same letters of reference indicate like parts on all the figures.

A is the hopper or grain box; it is supported by standards, *a*, which rest upon the side rails, *b*, of the frame; B B are cylindrical tubes placed horizontally underneath the hopper. Each of these tubes has an opening in the upper part, through which the grain from the hopper passes. A valve, *c*, works over each opening so that the communication from the hopper to the tubes may be cut off when desired. C is a rod which passes horizontally through the tubes, B B. This rod has a number of circular slides, *i*, upon it, one fitting each tube. D is a lever which passes through an eye at one end of the rod, C. This lever has its fulcrum at *d*, which is formed by a pin passing through the lever, and two plates which are secured by one of the side rails, the lever being between the plates, as shown in fig. 2. The lower end of lever D has a friction roller, G, which revolves, as it is acted upon by a cam, E; this cam is placed upon the axle, F, of the wheels, and is formed of two separate parts, one part, *f*, being firmly secured to the axle, and the other part, *g*, moving loosely on the axle, and secured to it at any desired point by the set screw, *h*. On each of these parts, *f* and *g*, there is a zig-zag projection. The space between these projections, therefore, is of a zig-zag form, and the roller, G, sets in the space. As the cam, E, revolves with the axle, the inner surfaces of the projections, *f* and *g*, act against the roller, G, and give the lever, D, to which the roller is attached, a vibratory motion. As part of the said lever passes through an eye in one end of the rod, C, a reciprocating motion is consequently given to it, and also to the slides, *i*, on the said rod, and which are within the tubes, B B. The slides move backwards and forwards in the tubes, directly under the openings in the upper part of them; therefore, as the grain falls into the said tubes, it is pushed out first at one side, and then at the other, by the reciprocating motion of the slides. The grain falls from the tubes, B B, into inclined troughs, H H—one for each tube; these convey the grain to the leather tubes, I I, which fit in the hollow teeth, J J. The method of distributing the grain will now be rendered evident. The grain may be distributed faster or slower, by giving the rod, C, a greater or less stroke, by placing the part, *g*, of the cam, E, at a greater or less distance from the other part, *f*. If the space between the zig-zag projection is considerable, there will be a shorter stroke given than if the space were narrower. The fulcrum, or pin, *d*, of lever D may also be placed higher or lower, holes being made for that purpose, by which the stroke of the rod, C, may be lengthened or shortened.

We will now explain how the lower ends of the teeth are thrown up when they meet with obstacles in the earth. K are draw rods (one seen) secured to the front of the side rails, *l*, in the usual manner, the ends of the said draw rods being forked and fitting in eyes. The opposite ends of the said rods are also forked, and in these forks the hollow teeth, J J, fit; to the front of each hollow tooth there is a lever, L, attached by a pivo , *k*; this lever passes up through the fork in the end of the draw rod, and is attached by a pivot, *m* a lever, M, which is secured to the draw ro by a pivot, *l*. O is a frame hung loosely by pivots, *n*, to the side rail, *b*; the ends of this frame rests upon the levers, M M.

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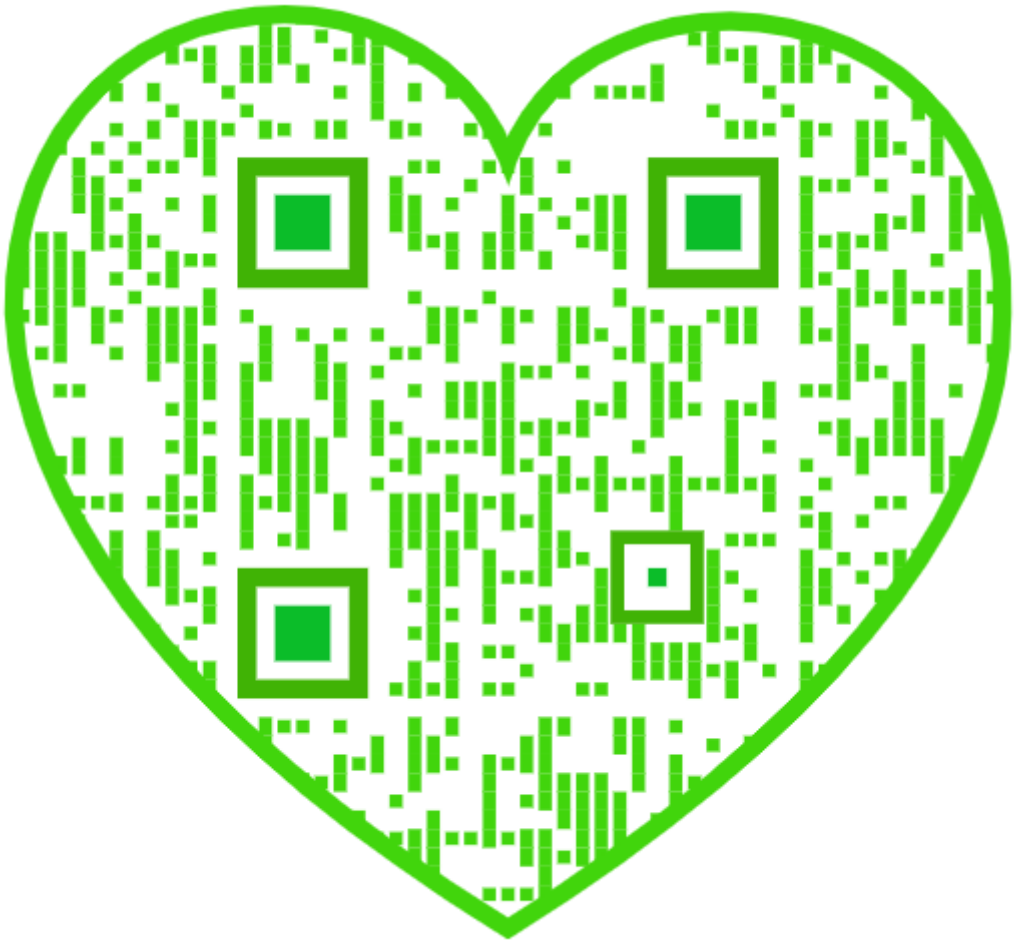

It will now be seen that when any obstacle comes in contact with the ends of the hollow teeth, J J, the teeth will be thrown back, and the lever, L, will draw upon the lever M, and raise it and the frame, O. When the ends of the teeth have passed over the obstruction, the frame, O, by its weight, will depress the levers, M M, and the teeth will resume their original position. These hollow teeth are also raised and depressed by the straps, P, secured to the back of the teeth. These straps are attached to the shaft, R, and by turning it, the teeth are elevated and depressed as may be desired. This is a grain drill which can be made cheaper than many now in use; it is simple, strong, and so formed as not exert any grinding action upon the grain, a fault peculiar in the distributing in some other drills.

Mr. Sanders having secured a patent, more information about rights, &c., may be obtained by letter addressed to him at his residence in Holiday's Cove.

MISCELLANEOUS.

Something more about the English Engineers' Strike.

The London "Weekly Dispatch" states that upwards of £30,000 ($143,500) were lost, per week, for fifteen weeks, making no less than $2,282,500. The wages have been reduced greatly below the level of what they were before the strike, and there are now hundreds of workmen out of employment, their places having been supplied by more laborers during the strike. A new invention has also resulted from the strike, by which castings are made, by a firm in London, without the use of skilled moulders. The Association of employers now numbers 25,000, and it speaks well for their spirit that such sentiments as the following are embraced in a recent address issued by them to their workmen; it says:—

"To us it shall be no disqualification to employment that an artizan has tried the experiment offered by co-operative workshops. Of these laudable, if mistaken attempts to secure to associated labor the profits of individual capital and enterprize, we have only too little reason to be jealous of the competition. But whether they succeed or fail, we trust that the rival theories of competition and co-operation may, side by side, be practically applied, without interruption, to social harmony and the mutual good-will of neighborly citizenship. None shall hail the success of the solution of the industrial problem with more sincere congratulation than ourselves; and we trust that, should the experiment prove, as we fear it will, to be signally disastrous, we shall be found honestly willing to mitigate the lot of the sufferers, to the extent of our ability, and the full limit of our peculiar opportunities."

Boiler Iron.

A correspondent in this city writing to us about boiler iron says, "he agrees with us that boilers should be made of the best materials only, but how is this to be ascertained, who is to decide. One boiler maker prefers one manufacturer's iron, one prefers another's, for reasons which are connected with price and the management of their shops. Recently the manufacturers of iron of East Pennsylvania petitioned Congress that no reduction be made on foreign boiler or railroad iron, because anthracite coal could only be profitably used in the fabrication of nails, in other words, "that cold and hot short iron was the consequence of the combination of their ores and fuel?" Our correspondent therefore suggests that in every case of explosion there should be an enquiry made into the quality of the boiler iron, who was its maker, where it came from, of what ores it was made and by what process, Facts thus obtained, he thinks, if carefully collected, would enable us to determine how to prevent Coroner's inquests, and save a vast deal of life. It is perfectly absurd, he thinks, to call twelve men together to say a man was scalded, and that the explosion was caused by a flaw which could not have been detected when the boiler was making. They should ask, who made the iron, who sold it, what was its price, &c. With these views we perfectly agree. The best makers of iron sometimes manufacture poor qualities of it. They should be taught by exposure not to sell a poor quality.

Art.

Engraving of Henry Clay.—Here we have before us a real likeness of Henry Clay, just issued by Bachia & Co., engraved by A. H. Ritchie, the eminent engraver in our city. The great orator is represented as delivering one of those impassioned speeches which so often made the hearts of thousands throb, and the Senate walls to vibrate. It is altogether the finest likeness of the great Kentuckian ever produced:—the head is fine; the eye actually gleams with life and genius. The admirers of Henry Clay will esteem it a privilege to possess such a likeness.

Photograph of the Moon.—We have before us a photograph of the Moon and another of the Boston Custom House, taken with the large equatorial telescope at Cambridge Observatory, by John A. Whipple, Daguerreotypist, No. 6 Washington st. Boston Custom House is very fine—it is well done. The one of the Moon is an object of curiosity, and is deeply interesting to the lovers of science. The surface of the Moon is peculiarly striking. It looks as if it were covered, in some parts, with huge rocks, lying thick as hailstones after a storm. These pictures are an evidence of the chemical action of light independent of heat.

Hydrophobia Cures.

The following is a cure given by a gentleman in a French paper, which he asserts has been used in France for two centuries, with success, and within the last ten years; he says: "I have used it in twenty cases, and always with entire success." This entitles the thing to an experiment; and, certainly, there are enough *outre* ingredients in the compound to ensure a chance of efficacy among some of them. Here is the recipe:—

Wash the wound, while recent, and the adjoining parts with cow's milk, boiled hot, daily, for nine days; for the same length of time, each morning before breakfast, drink a tumbler of the following potion, lukewarm:

	Gramme (15·4 grs. Troy).
Root of Angeline - - - -	30
Root of Gentian - - - -	30
Venetian Theriac - - - -	30
Assafœtida, "well crushed" - -	15
Oyster Shell - - - - -	15
Root of the Sweet Briar - - -	40
Scorzonera, the root unpeeled - -	40
Rue, fresh stems, a good handful -	—
Sage, cut up finely - - - -	—
Marine salt - - - - -	20
A head of garlic, crushed - - -	—
Three heads of leeks, with their leaves	—
Two small onions - - - -	—
A few spring daisies - - - -	—

Boil these together in a close vessel, with three quarts of good red wine, until one half be evaporated. Strain the liquid and put in a bottle with a ground stopper, and use as directed. The dose for a child should be diminished in proportion to age.

This is the remedy of M. Bee, Senior, schoolmaster, who begs the publisher of the Echo to give it to the world as a sovereign preventive of a fearful malady, and a cure for it in its earlier stages. As the constituents are all attainable without difficulty, there can be no peril in trying it, as every other specific has proved valueless.

The following is another receipt given by a French physician:—

"Take two table spoonsful of fresh chloride of lime, in powder, mix it with half a pint of water, and with this wash keep the wound constantly bathed and frequently renewed. The chlorine gas possesses the power of decomposing the tremendous poison, and renders mild and harmless that venom against whose resistlesss attack the artillery of science has been so long directed in vain. It is unnecessary to add that this wash should be applied as soon as possible after the infliction of the bite. From 1810 to 1824, the number of persons admitted into the Breslau hospital was 184, of whom only two died. 1783 to 1824, into the hospital of Zurich, 222 persons bitten by different animals, were admitted, (182 by dogs) of whom only four died.

[We can say nothing of the first receipt; it is a very complicated mixture. We believe the last receipt is a good one, if applied immediately after the person is bitten; but if the poison has got into the system and is working in it, we do not see what good it can do at all. It is, however, a good wash for putrid sores. We have known of it being used successfully for a bad festered wound from the bite of a dog.

Climate of Oregon.

The Portland Oregonian of April 24th gives the following very alluring account of the climate of Oregon:—

"In looking over the papers from the Atlantic States, one would be led to suppose, from the accounts given of the intense coldness of the weather the past winter, that there must be some mistake in the geographical position sustained by the Atlantic States towards their sister territory here, on the Pacific. While the mercury in the thermometer has become frozen there, we, in Oregon, in a latitude as far to the north as any of those States, have been enjoying the mildness of spring—the warm rays of the sun experienced here during part of the months of January and February, actually reminding us of May weather in New York.

While the ground here has been covered with green grass and gaudy flowers through the winter, there it has been mantled with several feet of snow. On the 20th of January last, a friend sent us a cluster of ripe strawberries, picked on the plains, where they grow spontaneously. They have been in blossom all over the plains during the whole winter. On the 10th of January, 1851, Jesse Applegate, of Umpqua, sent us a great variety of wild flowers, and several specimens of grass, then growing as green and fresh as in June, some blades of which were eighteen inches in length. And this reminds us that while the cattle of our Atlantic friends have been freezing to death in their stalls and sheds, ours have been roaming at large over our plains—unfed, save from nature's granary—and when slaughtered, would make a New York butcher put on his broadest, proudest grin, to think himself the happy vender of such delicious beef."

Railway Accidents in England.

The returns relating to railway accidents in Great Britain, for the half year ending December 31, 1851, have just been published. The number of passengers carried was 47,509,392; the number killed was 113; injured, 264. Eight passsengers were killed, and 213 injured from causes beyond their control; 9 passengers were killed and 14 injured owing to their own misconduct or want of caution; 32 servants of the companies or contractors we killed and 11 injured, owing to their own want of caution; 32 trespassers and other persons, neither passengers nor servants of the company, were killed, and 6 injured, by crossing or walking on railways. The length of railways in operation was 6,800.

Singular Invention.

We see it stated in our Western exchanges, that a gentleman near Louisville, Ky., has applied the telegraph to an entirely novel and unique use. He has nearly completed an invention for writing music as it is played from the piano-forte, the notes upon the sheets being produced as fast and to the exact time, as the keys are touched by the performer. Strakosch has offered him $10,000 for the patent right when the model is finished.

That this can be done is nothing strange, we think, for a patent was taken out by Bain to play on musical instruments by telegraph, but we do not see what benefits can be derived from such an invention.

The Ginger of Commerce.

The ginger of commerce is the produce of a plant growing in both the East and West Indies. In its appearance it resembles a reed, but the stems arise from a root similar to the root of the garden sweet flag, or iris. Like the root of this flower, that of the ginger plant spreads and increases in size every year. From the upper surface of the ginger root arises, in the spring, a green reed-like stalk, about the plant, which are white and lilac, and grow on a separate stem. The ginger we employ as a spice is the root, to obtain which the plant is cultivated in much the same way potatoes are, and when the stalks have withered, the roots are dug up. The best and soundest of them are selected, scraped quite clean, and carefully dried in the sun, when they are ready for exportation, and use. The inferior roots are scalded in boiling water instead of being scraped; and, these, when dried, form what is called black ginger, a very inferior kind. The color of black ginger, as it is termed, is yellowish grey on the outside, and orange brown within. In shape it is thick and knotty. The best or white ginger, being scraped in preparing it, is less in size not being so thick or knotty; its color is of a light yellow, and its taste is much more pungent and aromatic than that of the black kind.

Much of the ginger root that is now sold by druggists is of a beautiful white appearance; this is done by bleaching it. No good, but evil, is the result of this process, all for the sake of appearances.

Silver and Gold.

The London Times gives some elaborate tables concerning the comparative production of gold and silver, for the last few years.—From these tables it appears that the produce of gold in the world rose from 114,674 lb. in 1846, to 365,950 lb., in 1850. In those five years the increase was at the rate of 219 per cent., while silver only increased from 1,979,084 lb. in 1846, to 2,663,386 lb. in 1850, or 34½ (34·5) per cent. The former metal was in 1850, therefore, apparently increasing at the rate of 44 (43 8) per cent. per annum, and the latter at 7 (6·9) per cent.

The following is the estimated produce of the precious metals, in tons, in 1801, 1846, 1850, 1851, and the probable amount of 1852:

	Gold Tons.	Silver. Tons.	
1801	19	856, or 1 lb. of gold to	45 lb. of S.
1846	42	727, "	17 lb. "
1850	134	978, "	7 lb. "
1851	180	1002, "	5 lb. "
1852	242	1027, "	4 lb. "

Parker's Wheel.

The people in New Hampshire are determined to test the claims of Parker's Patent by an action at law, before they pay any taxes. No one can find fault with this, if too much is claimed by the plaintiffs. Pay Mr. Parker his just rights, gentlemen, but no more; if you do not infringe his patent you have no right to pay him; if you do, in good justice he should be paid; the right must first be established, and we hope the law-suit will be conducted openly, plainly, and candidly, without *great counsel* or much expense, so as to do justice—find out the rights of both parties.

Farming in Big Style.

Mr. Mechie, of Tiptree Hall, England, the same gentleman on whose farm McCormicks Reaper accomplished its great triumph, goes into farming in a style altogether surprising to us here. In a letter to the London Times he says:—

"It may be interesting to some of your agricultural readers to know that my 'irrigation by subterranean iron pipes with hose and jet, worked by steam power,' is completed on 170 acres. It is not necessary here to enter into details; suffice it to say that the cost, independent of steam engine, is £3 15s., ($18 18) per acre, added, as it were, to the fee simple of the estate. The working cost of conveying and applying to each acre 15 tons of liquid manure, or water, equivalent to a heavy rain of five hours' duration, is about 1s. 6d. per acre. The liquid is distributed through a fan like gutta percha spreader, issuing as a broad, thin, glassy sheet, and descending in heavy drops like a thunder shower. I may be thought rather speculative when I anticipate that within a century from this period the sewerage from our cities and towns will follow our lines of railway in gigantic arterial tubes, from which diverging veins will convey to the eager and distant farmer the very essence of the meat and bread which he produced at so much cost. We shall then no longer commit the folly of wasting our own manures, to replace them, at an enormous cost, by importations of bird's dung from the Pacific."

Here we have an instance of a farmer expending more than eighteen dollars on every acre for one single improvement.

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Stereoscopic Daguerreotype.

MESSRS. EDITORS—Directly after seeing the extract from the "London Mining Journal," in No. 34 of the Scientific American, I succeeded in re-producing the solid daguerreotype. My stereoscope is 9 inches long, 6 high, and 5 deep; my daguerreotypes are half sizes, placed upright in each end of the box (stereoscope); I have two mirrors, diverging at an angle of sixty degrees from the centre of the front of the box; there are two sight holes, two inches apart, in the middle of the front of the box; the light is admitted from the back. This instrument produces the most astonishing effect; it brings out the picture in bold relief, just as if the subject were standing before you in reality. It requires to be seen to be fully appreciated.

I have made a decided improvement on the above instrument: I take two pictures on one plate, two and a quarter inches apart; or, what is still better, on two plates joined together afterwards. I always place my two cameras at an angle of thirty degrees, in taking the pictures, keeping the eye of the subject directed in a line drawn directly between the two cameras, thereby producing what we might call a right and a left picture.

When I wish to produce the solid pictures, I simply look at the so arranged plate, through a common opera-glass, having the concave glasses taken out and convex ones put in their place, although the latter are not absolutely necessary. A yet simpler mode is to look at the above-named plate through a pair of common spectacles, having glasses of short focal distances; but the opera-glass is the best, in asmuch as it can be set to any focal distance, and it prevents the reflection of surrounding objects.

I perceive that our leading daguerreotypists have taken the matter in hand, and I expect to see them produce beautiful pictures which will rapidly take the place of the old kind.

J. F. MASCHER.

Philadelphia, June 13, 1852.

[A sharp controversy has taken place between Sir David Brewster and M. Claudet, about photographs taken by lenses, it has appeared in the "London Times." Sir David Brewster asserts that photographic portraits deviate more and more from truth as the lenses increase in diameter. He advised the search after more sensitive materials and the use of small lenses. He says, "that while M. Claudet will continue to practice his art, as he has hitherto done, with large lenses, others," he hopes, "will not disdain to guide the light of the sun by the light of science." He is very sharp on poor M. Claudet, and says he produces a copious number of grim anamorphoses of humanity, which have the merit of showing how well people look in their winding sheets. M. Claudet replies, and has greatly the advantage of the Scotch philosopher in temper and discreet language; in fact, he shows Sir David to be very inconsistent, for he awarded Claudet the only Council Medal at the Great Exhibition for his pictures, while now he denounces them. He says he will prove "that perfect lenses, of 3¼ inch aperture, and a sufficiently long focus, operating at a distance of 12 feet, are capable of giving a correct representation of the human form, and producing binocular portraits, to be raised into relief by the stereoscope without exaggeration, and he stands ready to repeat them before any scientific persons interested in the question." Here, then, Claudet marches right to the point in settling the dispute with the famous Optician—the greatest of this or any other age—and it would be nothing wonderful if he were mistaken: no man is perfect, the greatest and best make mistakes.

(For the Scientific American.)

The Electric Fire Telegraph.

Your paper of June 12 contains a very kind reclamation from A. A. Pope, of Somerville, Mass, in my behalf, as originator of the Electric Fire Telegraph. I wish, with your permission, to add a word in justice to the part taken in this enterprize by Moses G. Farmer, the constructor and present Superintendent of the Fire Alarm in this city.

The present performance of the Fire Telegraph, in Boston, may be first briefly stated, as the basis of its claim to scientific novelty and public utility. The nineteen alarm bells, scattered over Boston, are struck simultaneously with heavy hammers, by the touch of a single finger, at the Central Office, where an alarm of fire comes in over the wires from any one of the numerous signal stations in different parts of the city. Thus, frequently, within a few weeks, the bells all over Boston, have begun to strike the District number within a few seconds of the first discovery of a fire in some remote precinct. This is believed to be the first application of the telegraph to produce the effect of *power* at a distance. It is also the most thorough municipal organization which has yet been attempted, endowing the Municipality with nerves of sensation and motion, with brain and muscular apparatus.

My part in the originating of this system, dating back to 1845, has already been sufficiently stated in your journal. As early as 1848, Mr. Farmer's electro-magnetic escapement, for the liberation of powerful striking machinery, was constructed, and his attention was directed to the mechanism of the system, the right to some parts of which he has secured. After my communication, in March, 1851, to the City Government of Boston, Mr. Farmer entered at once into the work of practical arrangement and adaptation, giving proportion and form to the various parts, combining their operation, devising new safeguards and instruments, and contributing so much to the system in its present effective operation, that I wish always to ascribe to him a fully equal part with myself in its production.

I may be allowed to add that the construction, in Boston, has presented difficulties, apart from the first application of a new system, greater than would exist in almost any other city in this country. Where there a few large fire bells, with suitable tolling apparatus already provided, the application, with the experience now acquired, would be easy, and an indefinite amount of power could be obtained. Any communication addressed to Mr. Farmer, with regard to the extension of the Fire Telegraph in other cities, would receive also from me such attention as it would be in my power to give. WM. F. CHANNING.

Boston, June 14, 1852.

(For the Scientific American.)

New Instrument for Navigation.

As your paper is the medium through which the public receives information of nearly all the improvements in arts and sciences, at the present day, I have taken this method to make known a valuable improvement in getting the longitude at sea; or, the Easting from New York city to Liverpool, and the Westing from Liverpool to New York city, or any other place. With a good time-piece in hand—well regulated to mean time—and with an instrument that I have made for the purpose, I make the first observation in the seaport before the ship sails (this can be done at any time of night, if it be clear starlight); note down the bearing, the day of the month, the hour, minutes, and seconds, A. M. or P. M. This may be done a week or more before the ship leaves port, provided the time-piece keeps correct time. The subsequent observations can be made at sea, any time in a clear starlight night, and any time of the year, in the northern hemisphere. The subsequent observations are reckoned from the first observation made in port, each one independent of the other. I have a book, containing two tables, which are made for the purpose of saving time in the calculation; also examples made out, giving the answer in longitude, going East or West, and a diagram or figure annexed to each example,—making this method as plain to be understood as to look at the face of a clock to learn the time of day. In making the calculation, you set down the degrees thus: 45° 20′, as the first observation, and the time; next, the present observation, and the exact time; then turn to the tables, there is nothing to be done in the calculation but to add or subtract. The observation can be made in ten minutes, if the ship runs steady, and the calculation in less time.

I use none of the planets, or their satelites, in my calculations, excepting the one we stand on; I would prefer that the moon should be below the horizon at the time of making the observations. This instrument is so planned that there can be a compass attached or detached at pleasure, for the purpose of getting the variation of the needle; this can be ascertained at the time of getting the latitude by the Polar Star. This instrument may also be used, in preference to the sextant, in getting the latitude and longitude by the sun. Suppose, at 10 o'clock A. M., observation made; sun's altitude 55°; bearing of the compass 70°, south-east. The sun passes the meridian and descends to 55° altitude; the compass bears 61° south-west, from 70° 9°,—4° 30′ south-east or north-west is the variation of the needle.

In taking the angles by this instrument, you have no need of a line and plummet, pendulum, index hand, or vernier hand; yet every five minutes of a degree can be distinctly seen. This instrument can be separated into four parts in one minute, and placed in the cabin for security. JOHN STINSON.

Danville, Warren Co., N. J., June 8, 1852.

Recent Foreign Inventions.

TO PREVENT WOOD FROM WARPING.—C. Francois Tachet, of Paris, has taken out a patent for the following method of preparing wood to prevent it from warping or shrinking. The ordinary method of doing this is to employ two or more thin pieces which are united together with the grain cross-wise, by means of glue or liquid cement, but this only partially answers its intended purpose. as glue, or cement, applied in a liquid state, is always liable to be affected by a moist atmosphere, and the expansion produced thereby, and the subsequent unequal contraction in drying, causes a certain amount of warping Now the object of the patentee is to unite pieces of wood together, as to render them independent of atmospheric influences, and this he effects by employing the cement in a dry and powdered state, and applying heat to the exterior of the pieces of wood to be united, so as to effect the melting of the cement by transmission. The cement which the patentee employs is gum lack, alone or in combination with other materials. This he reduces to a powder, and sprinkles evenly over the surface of one of the pieces of wood to be united. He then lays the other pieces of wood on the cement-covered surface, and repeats the process of sprinkling cement and applying thicknesses of wood according to the ultimate required thickness to be produced. He then clamps the pieces of wood together and applies sand heated to about 300° centigrade to the exterior surfaces, and continues this application of heated sand until the cement is melted, when the sand is removed, and the air admitted to cool the wood and set the cement When quite cold, the prepared wood is removed from the clamping-press, and may then be applied to any useful purpose.—[London Mechanic's Magazine.

[We commend this invention to the attention of pianoforte makers, and all cabinet makers in general.

Tomato Figs.

The following is the method of preserving tomatoes in Bermuda, and thereby manufacturing a sweet preserve something like figs:—

"Take six pounds of sugar to one peck (or sixteen pounds) of the fruit, scald and remove the skin of the fruit in the usual way, cook them over a fire, their own juice being sufficient without the addition of water, until the sugar penetrates and they are clarified, they are then shaken out, spread on dishes, flattened, and dried in the sun. A small quantity of the syrup should be occasionally sprinkled over them whilst drying, after which pack them down in boxes, treating each layer with powdered sugar. The syrup is afterwards concentrated and bottled for use. They keep from year to year, and retain their flavor surprisingly, which is nearly that of the best quality of fresh figs. The pear-shaped or single tomatoes answer the purpose best. Ordinary brown sugar may be used, a large portion of which is retained in the syrup.

The Mouth of the Mississippi.

A distinguished officer of the Engineers of the U. S. Army, who has long resided in New Orleans, and who made good use of the many opportunities offered him for studying the peculiar character of the delta of the Mississippi and the characteristics of our grand but mysterious river, has made a proposal to the New Orleans Chamber of Commerce to enter into a contract with that city, the State, or the General Government, to deepen the channel over one of the bars at the mouth of the Mississippi. He proposes to give a depth of at least twenty feet, by the lead, at low water, over the shallowest part, and to make the channel wide enough for a tow-boat with one ship on each side to pass at all times: to maintain this condition of the bar for twenty-five-years—when the same process could be again applied—for the sum of one hundred thousand dollars per annum. The first instalment to be paid only when the depth and width shall have been made. Should the depth of twenty-five feet, instead of twenty feet be obtained, the sum of $125,000 will be paid.

The plan of operations has been submitted, to many professional and practical engineers, and no objection has yet been made to it.

Artesian Wells in Arkansas.

The Dallas (Ala.) Gazette says that the first Artesian well of Mr. J. E. Mathews, in Cahaba, is completed. It is 735 feet deep, and sends forth a stream of water measured at 1,200 gallons per minute. The famous French well at Grenoble, it is said, does not discharge more than half this quantity. "The water (says the Gazette) boils up, roaring like a cataract, forming a branch of considerable size, and the low grounds, some two hundred yards distant, require ditching, to carry off the immense quantity of water collected upon its surface.

Mr. Reid, the successful borer of this well, has commenced boring another, some sixty yards distant (for Mr. Mathews) which will be some 1,500 or 2,000 feet deep. To prevent injury to the first, it is necessary to make the second one much deeper, so as to reach a different stratum of water. The first well is tubed, as the second will be.

Mr. Reid is also boring a well for Dr. English, two hundred yards distant from Mr. Mathews. It is now 536 feet deep, and discharges 200 gallons of water per minute."

A correspondent of the Gazette gives the following in relation to the first well of Mr. Mathews, which was bored for the purpose of obtaining sufficient water to supply a steam cotton mill:—

First, a well was dug in the ordinary way, 32 feet through the red clay sand and gravel lying upon the rotten limestone. A large pine log was then procured, and a hole 3¼ inches in diameter bored through it. After sharpening the end, and putting an iron band around it, the log was put down and firmly driven and forced into the rock. The well was then filled up—the upper end of the log appearing about a foot above the surface. The boring then commenced, and, with the various tools and contrivances of the art, the earth was rapidly penetrated.

As each lower sheet of water was reached by the tools, the water was thrown up by the whole in greater quantities and with more violence. When the "first water"—that is, the water just below the first sand stone—was reached, the upward flow of the water did not exceed seven gallons per minute. It was increased to one hundred gallons when the second sand stone was perforated, and on reaching the third sheet of water, upwards of 300 gallons per minute rushed up through the orifice, seemingly impatient of its limits.

Thinking that the quantity of water would be increased by enlarging the hole, they rimmed out 9¼ inches in diameter, and 538 feet deep, to the sand stone lying above this third bed water, and inserted a tube from the first, and resting upon the third sand stone. They were not disappointed. The water from a small stream became a large column rushing upwards with violence, at the rate of 1,300 gallons per minute, and running off in a considerable rivulet.

The walls of the Buffalo Republic printing office fell last week with a tremendous crash, burying several compositors in the ruins. They all escaped most miraculously, with a few bruises, the cases and imposing stones supporting the roof and bricks, and giving them time to creep out. The forms, type, &c., were all knocked into *pi*.

John Cunningham, the American engineer has been freed from his Cuban imprisonment.

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NEW INVENTIONS.

Improvement in Water Closets.

Messrs. Daniel Ryan and John Flanagan, of this city, have taken measures to secure a patent for an improvement in Water Closets. It is well known that improvements in such apparatus are of great consequence, and therefore of no small value. The nature of the improvement consists in surrounding the upper part of the bowl seat with a chest or penstock into which the water from a supply pipe flows and discharges itself in a solid sheet around the conical sides of the seat, and flowing into and cleaning the pan at the bottom of the bowl seat. There are some other improvements of an excellent character, but we cannot render the subject so intelligible as we wish we could, witnout an engraving.

Cloth Measuring in Power Looms.

W. H. Woodworth, of Salmon Falls, N. H., has taken measures to secure a patent for measuring cloth as it is being woven in power looms. A spool of cords, tied together, of different colors, according to the length of the cuts of the web in the loom, is made to wind up on a bobbin, worked by the action of the loom as the cloth is being woven. The apparatus, with the cords, is very neat and small, and is secured underneath the breast beam. Thus, for example, a blue cord will indicate 40 yards for a cut, and when this cord is wound up on its barrel, and the next cord, which may be a red one, appears, it will let the weaver know exactly where to take off the cut. It is a better plan than to mark the warp, and is very simple. Part of this invention has been assigned to A. G. Haley, of Salmon Falls.

Coiling and Packing in Spinning.

Peter McKinlay, of Wappinger's Falls, Duchess Co., N. Y., has taken measures to secure a patent for valuable improvements in coiling and packing the slivers and rovings of cotton, wool, flax, and other fibrous materials, during the operation of spinning. The improvements are four in number, but as we design to have the invention illustrated in our columns in a few weeks, we shall not describe its nature particularly at this time. The slivers can be packed in the cans or coiled around rods, or the slivers can be packed without any can at all; the rovings can also be taken away out of each can, when full, without the necessity of removing the can. This is an important advantage. The invention is of great moment to our manufacturers; the inventor stands high as a thorough and skillful man fully acquainted with all the defects and advantages of our present spinning machinery.

Improved Governor for Steam Engines.

John Tremper, of Buffalo, N. Y., has invented a very simple and beautiful improvement on Governors for steam engines. It can be made at a very small cost in comparison with the common governor. A vertical spindle receives motion from the main shaft; on this is placed a sliding collar, which is connected by a rod to the throttle valve. The slide, however, has no flexible arms attached to it, to elevate the rod by centrifugal action. The construction and operation are different in principle, entirely, from the common governors. Two straps are attached to the top of the spindle opposite one another, and the lower ends secured to balls on horizontal rigid arms, which are secured to the sliding collar. The straps partake in a moment of the motion of the spindle, and act upon the balls at once on the outer ends of the horizontal arms and lift up the sliding collar in an instant. The action of this governor is by velocity and gravity, the velocity of the spindle and the gravity of the sliding collar. A sudden increase of velocity in the spindle makes the cords of the arms wind around the top of the spindle, and this lifts the sliding collar instantly, when the steam is cut off, and then the gravity of the balls and collar, when the velocity of the spindle is thus checked, soon restores the cord to its angular rigidity. It is a unique system of checking and balancing for governing the quantity of steam required for the engine, so as to preserve a uniform motion of machinery. It is very excellent for grist and saw mills and factories. The inventor has taken measures to secure a patent.

Railroad Alarm.

D. C. Teller, of Cooperstown, Oswego, Co., N. Y., has taken measures to secure a patent for useful improvement in making an alarm on a locomotive, to warn the engineer of the approaching train, when it is one, two, or more miles distant, and coming on the same track. The nature of the invention consists in arranging and attaching a series of springs, wires, and levers to an ordinary railroad track, in such a manner that a locomotive in passing along the track will operate upon levers and cause springs to be thrown qut sufficiently far from the rails as to cause the said springs to act upon a rod attached to and extending down upon another locomotive running on the same track in an opposite direction. The rod is designed to operate, by wires or other means, the steam whistle or bell at the ear of the engineer. The invention is one which has arrested the attention of a number of engineers, and in many cases may be of great use for single tracks. A practical test of its merits, alone, can determine its utility.

BRONSON'S GOLD SEEKER.

Figure 1.

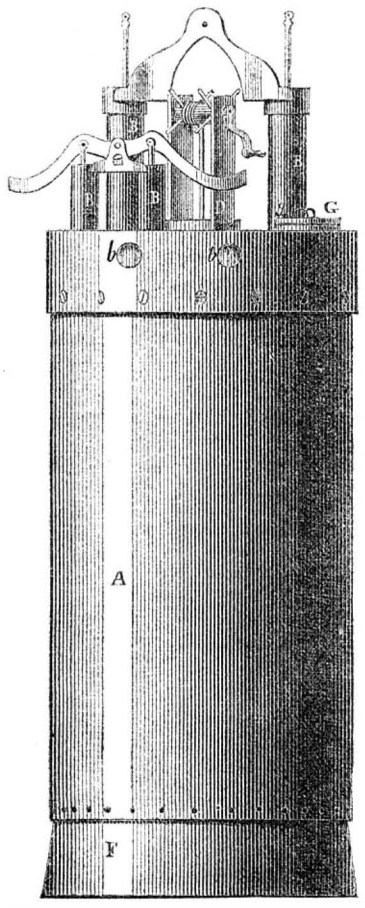
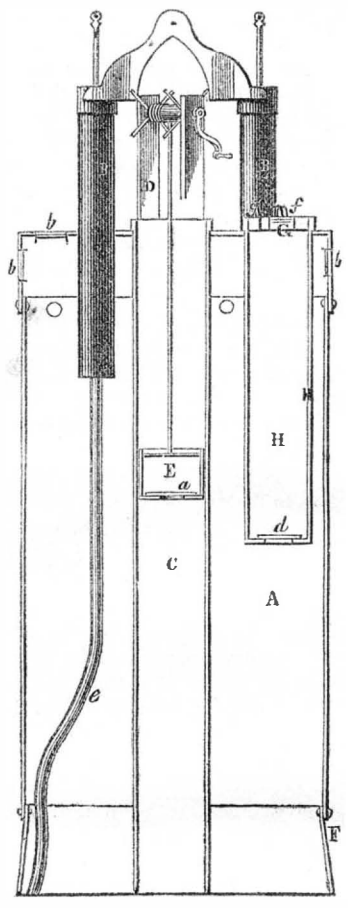


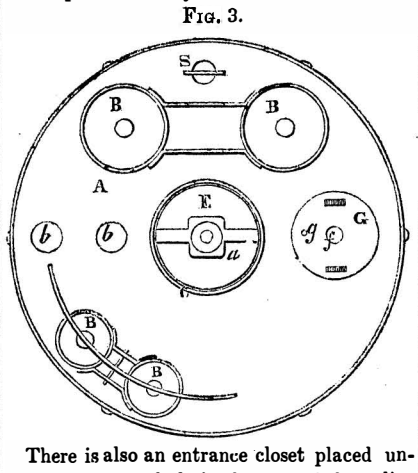
Figure 2.



The accompanying engravings are views of a machine invented by Abram Bronson, of North Fairfield, Huron Co., Ohio, for digging and seeking for gold in the beds of streams and rivers.

Figure 1 is an outside view of the machine; fig. 2 is a vertical section, taken through the middle of it, and fig. 3 is a plan view. The same letters of reference indicate like parts. The nature of this invention consists in displacing the water within a cylinder by means of atmospheric air forced and compressed within the cylinder by air pumps, by which arrangement, in connection with a draught tube, workmen may descend within the cylinder to the bottom of rivers and streams, and there remove and pass up depositions or parts of the river's bed, without permitting the air to escape from the cylinder.

Fig. 3.



There is also an entrance closet placed underneath a man-hole in the top of the cylinder, said closet being within the cylinder, and provided with a stop-cock, and also a door at the lower part; the closet being for the purpose of allowing the workmen to pass into and out of the cylinder without permitting the compressed air to escape.

A is a large tube, cylinder, or chamber, made of any material suitable for the purpose. B B are air-pumps on the top of the cylinder, for the purpose of compressing air within it. C, fig. 2, is the draught passage or pipe, placed in the middle of the cylinder; this tube may be attached firmly to the upper part of the cylinder, or it may be attached in any flexible manner by means of india rubber, &c. By having the draught pipe flexibly attached, the lower end of it may be passed over the whole area enclosed by the bottom of cylinder A. Directly over the draught tube, C, there is placed a windlass, D, for the purpose of raising the bucket, E, which works within the draught tube. This bucket may have a valve, *a*, in its bottom. Suppose the apparatus to be sunk in a river, and its lower end resting on the bottom, it will at once be perceived that the pumps, B, can force and compress air in the inside of the cylinder, so as to prevent water from entering into it. The deposits are lifted in the draught-tube, C, and this tube acts as a cut-off for the air. The workman excavates the bed of the river that is encompassed by the cylinder, and places the deposits in the bucket, E, when it is drawn up by the windlas, D. The cylinder may be made of any required length by having it so constructed that section after section can be added to it. The lower section, F, is made somewhat bell-mouthed or flaring, and it thus forms a good base for the cylinder. The draught tube may also be formed in sections similar to that of a telescope. In the upper part of the cylinder there are lights, *b b*, made of strong glass. To the pump, B, there may be attached hose, *e*, as exhibited in fig. 2, for the purpose of conveying fresh air to the bottoms of the cylinder. When the apparatus rests on a clay bottom, no water will find ingress to the draught pipe. In that case there will be less pressure of air within the cylinder.

G is the man-hole on the top of the cylinder, A; immediately under it is the entrance closet, H. This closet is provided with a stop-cock, and it has a trap-door, *d*, on its lower end. The object of this closet is to allow the workmen to pass into and out of the cylinder without permitting the air to escape. If the air should escape, the water would enter the cylinder, this would be a cause of trouble. The workmen, in passing out of the cylinder, enter the closet through the door, *d* they then close this door and the stop-cock, and emerge through the man-hole, G. *q* is a screw bolt to fasten the man-hole cap, and *f* is a light of glass placed in the centre of it; it is lifted by taking hold of the two lugs.

The apparatus may be sunk by means of weights attached to it, or in any other proper manner; it may also be placed between two scows, or passed down through a scow.

The above description of the engravings will render the construction and operation of this apparatus plain to all. The inventor has taken measures to secure a patent, and more information may be obtained by letter addressed to him at his residence.

The New York Crystal Palace.

The Managers of the New York Riddle's Fair have published a card, stating that $200,000 were required to commence the project, and that $184,200 have been subscribed. As we have already stated, the great object of the Exhibition is not the glory and honor of our common country, but the gain ot the almighty dollar. The circular signed by Theodore Sedwick, President, and all the respectable managers, presents the profits to be made, as a most complete and forcible argument for subscribing for stock. They state that 9,720 visits, at 50 cents each, may be expected every day for 150 days. Let us quote the rest from the circular:

"The exhibition of the American Institute, usually held at Castle Garden, has three or four thousand visitors a day. It is surely not extravagant to estimate double the number for the Reservoir Square Building. Any way, therefore, this calculation will be found a safe one. Now look at the financial results:

1,458,000 visits, at 50 cts., is . . .		$729,000
The estimated cost of the building is	$150,000	
Contingent expenses of freight, insurance, and management	100,000	
Add for short estimate . .	50,000	
	300,000	—300,000
Total		$129,000

Here are arguments for you: they are indeed worthy of stockjobbers, but not of those who would desire to have a World's Fair in our country, upon the same principle and capable of rivalling the London one. The gentlemen managers appear to have envied the money-making faculties of Mr. Barnum, but it will take them all pressed together to equal him in Museum Exhibitions. We certainly wish them all success, for we cannot wish failure and misfortune to any person or persons engaged in moral and lawful pursuits; and to them the object is no doubt a laudable one; to us, however, it is not. We had hoped to see a "World's Far" in some part of our country in a few years hence, but this one, it is our opinion, will prevent it. The London Exhibition cost our country, one way or another, more than two millions of dollars, and we expected the people of Europe would, at some future day, return us the favor, as they no doubt would. Our New York Exhibition Managers have the glorious object in view of making a patriotic pocket full out of their own countrymen.

These are our views on the subject; it will make no difference with us whether the affair takes place or not; in fact we know the Exhibition will be a benefit to New York city, but we like to see good principles and noble actions characterizing every movement among our people.

Trial of Fire Engines.

We have received a letter from a correspondent, informing us of a trial which took place in Newark, N. J., on Thursday afternoon, the 17th inst., between two fire engines; the one, No. 2, being built in Newark by J. & L. Allen; and the other, No. 8, by James Smith, of New York. These are both pianos. They played into one another alternately for five minutes. No. 2 washed No. 8, and then kept clear of her water. No. 2 threw a horizontal stream 168 feet; No. 8 167 feet 5 inches. No. 3 is built with some improvements, —what they are he saith not.

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Scientific American

NEW-YORK, JUNE 26, 1852.

Man and the Atmosphere.

One of the best arguments in favor of our earth being a special creation, opposed to the nebular hypothesis, or the nonsensical electrical matter theory, is derived from the atmosphere, that wonderful ocean of gas in which we live, and which we inhale at every breath. Viewing natural laws as the operations of matter (not the properties of it, which all high natural-law theorists blunderingly mix together), we cannot conceive how the moon could ever have been a part of this planet in a gaseous or fluid state, according to the nebular hypothesis. The moon has no atmosphere, no seas, no lakes, no rivers. Those men who talk of natural laws being eternal and universal, and of the whole of the planets, with their satelites, and the glorious sun, being at one time a huge mixed mass of gas, out of which they were resolved by gravity, have never profoundly reflected upon the simple question of "respiration." The same laws are not in existence throughout every part of the universe. There may be laws in active force in some of the planets unknown to our planet, and of which we cannot have the remotest conception. It must be so with respect to the solar orb; philosophers have written and talked much about the cause of solar light—how it is produced—but the subject is still shrouded in mystery. On the moon's surface no gentle dews distil their sweets, and no refreshing shower falls upon the lava rocks there; no flowers bloom, and no sweet sound nor perfume float upon the gale; there is no breeze for there is no atmosphere,—all is a lifeless dreary waste. Those who recognize moral laws as eternal principles—and none but the morally insane deny them—know that no moral law is in force in the moon, for moral principles are properties connected with intelligent and responsible beings. If our planet had no atmosphere, no living creature would be seen moving on its surface. The atmosphere must, from its very nature, have been specially created for man, and man especially created for the atmosphere. His muscles are solid pieces of the principal element of the atmosphere. It is composed of 79 parts nitrogen and 21 oxygen, and this very composition is evidence of a special design. A full grown person takes 40 cubic inches of this atmosphere into his system every three seconds, and no person could exist for one minute if deprived of air, and if its composition were different it would be incapable of supporting life. Why this should be so, we cannot tell; we only know that such is the fact—one over which man has no control, to alter or amend, by any invention whatever. Man did not create this atmosphere for himself, nor did the atmosphere call itself into existence for him, and the natural law that could call them into existence, apart from the fiat of a great Intelligent Being, according to some theorists, must be one they have dreamed about, for such a law has never had an existence since time began on this earth. To produce the simple act of respiration—breathing—both the atmosphere and man must have been specially created with the properties and qualities which they possess. The oxygen performs the most active part in respiration; it is extracted from the nitrogen in the lungs, and combines with the carbon and hydrogen in the system, forming oxygenated compounds, such as carbonic acid gas, and the vapor of water; these products are expelled from the lungs. The oxygen acts as the supporter of low combustion, and the human body in life is like the "burning bush," burning but not consumed. Why, it might be asked, was man made to live on bread &c.? If his body be principally composed of water, and the principal element of the atmosphere, why is it that he has to toil for a food to keep up life, which merely goes into his system to be quickly expelled therefrom? Why is he made to require such food as demands unceasing toil to procure it, or the sacrifice of other lives to enjoy. Why was he not made so as to feed upon air or water for food? These questions are all vain; the nebular hypothesists, who endeavor to account for all things, may be able to give some answer; ours is, "all things are done well;" there is beauty over all this delectable world.

It has been said that "nitrogen is a poison and oxygen is the vital air;" this is a great error: oxygen is just as much a poison as nitrogen,—our atmosphere proves this. Oxygen is no doubt the active agent of respiration, but it only serves its purpose as combined with 79 parts of nitrogen to do this. In life it is the fruitful agent for sustaining our bodies, but it is also the fruitful agent which at last brings down the strong man to the grave, and re-composes his frame into the clods of the valley, from which it originally sprung.

Who Rules the Country?

We boast of being the most free, happy, and best governed people in the world. The boast is no doubt true, but in making it, we should always take the exceptions into consideration. We are at least the *most* governed people in the world, if legislation is any criterion, for it is interminable. We have universal suffrage, and the charter of our liberties proclaims the doctrine—"rulers receive their just powers from the consent of the governed." But who make, and who are our rulers—the universal people? We do not think so. If all the men in these United States were asked, "what part did you take in electing the rulers of our Confederacy," we are confident that eighty out of every hundred would say, "we voted to elect the nominees," the other fifth part of our voters could say, "we got them elected." The great mass of our people submit to be led; they are the most patient and accommodating people on the face of the earth. The city government of New York would perhaps not be tolerated in a single city in Britain; the abuse of power, the squandering of money, the enormous taxes, are without a parallel in any city in the world, yet our people bear it with great patience.

We have a Congress at Washington, but its members do not make all the laws; they speak and vote upon them, but some of them are made in New York and other places before Congress assembles, and the members have the privilege of voting for them and making them effective, just like the eight-tenths of our people who vote for political nominees at elections. We have what is called "The Third House" in Washington; this is a self-elected body composed of what are termed "lobby members," these men make quite a number of laws, to the great disgrace, sometimes, of the Senate. The lobby members belong to every class, each having its own peculiar interests to advance; they care not for their country nor liberty, their own benefit is the sole object of their outside legislation. It is thought, here, that with plenty of brass in their pockets and faces, they can accomplish almost any object. In our last number, on page 314, we noticed a Bill which had been introduced into the Senate by Mr. Dawson, for making the acts of the Chief Clerk of the "Patent Office" legal. We merely remarked that we did not see the use of this Bill, but since then we have learned that it is a most disgraceful one. The Senate passed it and sent it down to the House of Representatives, but on Monday, the 14th, the Senate, by a vote, recalled it, for it contained the odious provision of "making all the acts of the Chief Clerk of the Patent Office, and the Commissioner of Patents, valid and effectual at law." Had this Bill become a law, fraud, corruption, and every evil deed might be made valid and effectual at law, by the Chief Clerk and Commissioner of Patents. Why is such a Bill introduced at all; there is no necessity for it? Some of the Senators must know why it was introduced. There is surely something "under the rose" here. Senator Seward, it is said, knows all about it. The Committee on the Judiciary, through whose hands the Bill passed, was declared by Senator Geyer to be unacquainted with the Patent Laws. The majority of our Senators are also, or they would not have uttered such sentiments as are reported in the "Congressional Globe," in the debate on the Patent Laws. The Reporter for the Telegraph appears to have an understanding with the members of the "Third House," as a few lines is all that he has reported to the daily papers here, of one of the most important debates that has taken place during the present Session.

Fresnel's Light-house Reflectors.

History tells us that the grandest lighthouse ever erected was the celebrated colossal statue, which strode over the harbor of Rhodes. Ancient lighthouses, even among the maritime Phœnicians and Greeks, were merely fires made of wood, and kept burning upon tall cliffs, or else dim lamps kept burning in rude towers. It was easy, in past days to delude the weary mariners buffetting the storm and billow by the false bonfires of those land pirates, who, both in France, Spain, Ireland, and Britain, were, at one time, so numerous—whose profession was to illure, by false lights, the storm-stricken sailor to some destructive rock, then murder those who escaped the sea, for the plunder of the wrecked vessel. Those days have gone past, more by improvements in marine beacons than the humanity of the age or the vigilance of governments, but it is not long since those improvements were made. In modern times, England has, for a long period, been the most eminent marine nation, consequently, as her coast is very dangerous, great attention has been paid to the construction of good lighthouses. The three most wonderful sea structures of light-houses in existence belong to her; they are the well known Eddystone Lighthouse, built by that famous engineer Smeaton, the Bell Rock Lighthouse, and the Skerrevore Lighthouse. The Eddystone Lighthouse was completed by Smeaton, in 1759. It is 68 feet high, and the base 26 feet in diameter being barely less than the surface of the rock on which it stands). It is built of stone; the stones are dovetailed together, and "joggled," as it is termed, so as to prevent the courses of stones from sliding on each other. It is situated in the midst of the sea, nine or ten miles distant from Plymouth. Tallow candles were burned in this lighthouse for forty years after it was finished. Then came lamps with twisted-cotton wicks, and then common argand lamps; all these, however, are now superseded by argand lamps and reflectors, one argand lamp with lenses and reflectors, and one argand lamp with lenses and reflecting prisms.

So satisfactory had been the result of the metal reflectors, in lighthouses, that there seemed little room for improvement, until Fresnel devised the application of lenses, and also reflecting prisms in combination with lenses, to a single large lamp. There are great practical difficulties in fabricating a large glass lens. Condorcet and Brewster suggested, and Fresnel effected the construction of a lens of separate prisms, all unnecessary glass being removed. The great improvement made by him was the substitution of reflecting prisms for mirrors, thus introducing the principle of lighting by one argand lamp lenses and reflecting prisms. When light is falling on the second surface of a prism, it may fall so obliquely that the surface cannot refract it, this incident light is, therefore, totally reflected from the second surface. "If a ray," says Professor Cooper, "enter the glass prism so as to make the angle of incidence greater than 41° 49′, it is totally reflected." Fresnel tried the illuminating powers of this light, in 1843, against those of mirrors, and found it to be as 140 is to 87. The first light of this kind, on a large scale, put up in a lighthouse, was by Stephenson. Fresnel is a Frenchman, but England, having always an eye to marine improvements, has adopted his mode of lighting more extensively than even France. It is not much to the credit of our go-aheaditive spirit that we are so far behind in our lighthouse system. We hope that what we have said may be the means of doing some good for our hardy sailors. We hope it will never again be said that expensive lighthouse apparatus was imported to this city, and lay in our Custom House, unheeded, until it was sold at auction for old metal, to some cunning fellows who knew what it was. This was done, and our government had no little trouble to get the apparatus back again; the case is still at law.

Burnet's Patent Water Cooler.

The use of ice in hot weather is indispensable to health and comfort, when used prudently. Its employment is becoming more general in every family, rich and poor. We have often regretted the great waste of ice by the common means of using it; this has, we are happy to say, been remedied by coolers on an excellent principle. Burnet's Water Cooler, patented last year, and for sale by J. & C. Berrian, 601 Broadway, this city, is an excellent and at the same time handsome apparatus for economizing ice. The Cooler is made like a hollow cylinder, with a jacket, having its division filled with some good non-conducting material. The ice is placed inside with the water, and as the atmosphere does not come in contact with it and the water, none of the cold is absorbed by the hot air on the outside. This is the way by which the ice is saved. There is a pan for keeping fruit under the cover, and it is very convenient for offices, stores, workshops, and private dwellings. Two pounds of ice to the gallon of water will keep it at 40°—only 10° above the freezing point—all day. We have one of them in our office, and consider it to be a great improvement over the earthen jars which, at one time, were so much in vogue.

Preservation of Meats.

In Houndsditch, London, there is a large establishment for making "preserved meats." Meat and vegetables are put up in canisters, which keep for many years if the operation be performed in a proper manner. All the heating is done by steam, and by a very peculiar process. The canisters, filled with the meats to be preserved, are put into a brown-looking mixture, which looks like chocolate. No fire is visible, but the vessels containing this liquid are ramified with steam pipe. This liquid is the chloride of calcium; it will not boil under a temperature of 320°; there is a most important object in using it instead of water, which boils at 212°. A great heat is obtained without steam, and this is just what is wanted. The canisters containing the provision, before being placed in the bath of the chloride of calcium or lime, are closed permanently down, with the exception of a small hole in each, not much larger than the prick of a shoemaker's awl in the cover. The cook stands watching, with a cold sponge and a soldering tool. Whenever he sees steam issuing in a small jet from the hole in any canister, he knows the enclosed air is driven out of the canister, and whenever he is satisfied the viands are perfectly done, he squeezes from the sponge a drop of water in the hole, the steam is at once condensed, and then he drops a plug of molten solder in the opening, and thus hermetically seals the canister. All the canisters are treated in this manner. Meat put up in this way has been known to keep good for years, but if, by any accident, the air gets inside, it putrifies in a short time. It is the air which causes decomposition in all animal substances: it is the grand agent of both life and death. One sign of putrifaction, in such canisters, is their bulging outwards; those which are fresh have a concave surface. This mode of preserving meat and vegetables is a very excellent one, indeed, if proper care be taken in the selection of good meat, and the careful expulsion and exclusion of air. One defect of the system is, every canister purchased by a stranger must be by faith, for there is no way of finding out what the quality of the viands is. In this respect it is inferior to the patent "Meat Biscuit" of Gail Borden, Jr.

The Use and Application of Chloroform.

The medical journals have been discussing the chloroform question again. A few deaths by its use has excited much attention, and some have come to the conclusion that it should not be used to render people insensible during severe surgical operations. The hydropathists have thus expressed themselves. We believe that there is no danger in the use of chloroform, if applied with discretion. The deaths which have resulted from its application have been very few, considering the extensive use which is made of it. Its uniform success and safety rendered those incautious under whose superintendence the deaths were produced. In every case the quantity employed should be weighed or measured, but it is often given without the least attention being paid to the *exact* quantity employed.

Candidates for the Presidency.

Gen. Scott received the Whig nomination for President on last Monday, at Baltimore; no less than than 53 ballottings were cast. The two candidates are—Gen. Scott, Whig; Gen. Pierce, Democrat.

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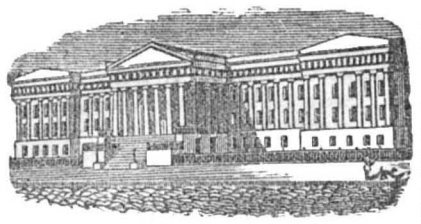

Reported Officially for the Scientific American

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING JUNE 15, 1852.

FASTENINGS FOR GARMENTS—By E. B. Belknap, of Spring Garden, Pa.: I claim the combination of the catch-plate with the plates above and below it, as described.

I claim the perforated bar for preventing the instrument from turning, the whole being arranged and acting substantially as set forth.

VALVES OR GATES FOR OBLIQUE FLOAT PADDLE WHEELS—By J. C Carncross, of Philadelphia, Pa.: I claim the series of radial winged and pivotted gates for preventing the water, acted on by the paddles, being moved laterally as they move through the water, and opening to deliver the water freely at the proper time, arranged and operating substantially as described.

MILL FOR CRUSHING QUARTZ—By J. W. Cochran, of New York City: I claim giving motion to the balls between the two plates or discs, in the manner and for the purpose specified.

PIANOFORTES—By Wm. Compton, of New York City: I claim making the perforated bridge for the upbearing of the strings, a part of the solid arched frame or plate, as described.

GRANULAR FUEL FROM BRUSHWOOD AND TWIGS.—By Reuben Daniels, of Woodstock, Vt.: I claim the granular fuel produced from brushwood and twigs by cutting the same into lengths about equal to its average diameter, as described, as a new manufacture.

[Would Mr. Daniels consider any person infringing his patent, who took his axe and cut twigs and brushwood any length he chose, and used them for fuel? We believe this would not be an infringement

CAST-IRON CAR WHEELS—By Peter Dorsch, of Schenectady, N. Y.: I claim the double reversed corrugations connecting the rim and hub, forming and acting as described, and the combinations of these corrugated parts with the annular cylinder between them and the hub, as described.

MACHINES FOR MAKING CIGARS—By Wm. Dawson, of Huntington, Ct.: I claim the manner described of making cigars, viz., by combining with the cutters and followers which cut off and feed in the requisite quantity of tobacco for each cigar, the rollers for rolling up the fillers, and putting on the wrappers, said rollers having the requisite arrangement of parts, so as to open to receive the material, and close to form the cigar, and again open to deliver the finished article, in the manner substantially as described.

I also claim the making of the roller which feeds in the wrapper, of less diameter than the rollers which form the filler, so that the filler may move at an increased velocity over that of the wrapper, for the purpose of more evenly spreading out the wrapper, and winding it more tightly upon said fillers, substantially as described.

POLISHING DAGUERREOTYPE PLATES—By Townsend Duryea, of Williamsburgh, N. Y.: I claim the horizontal reciprocating bed, operated in the manner described, or in any other equivalent way, in combination with the frame, for the purpose specified.

ALARM LOCKS—By Chas. Fleischel, of New York City: I claim the combination of the slide and button, constructed for the purpose of making and breaking the connection of the bell and hammer with the bolt catch, latch, or fastening of the lock, substantially as described

I also claim the combination of the lever with the bolt and catch or latch of the lock, by means of which the movement of the catch is prevented, when the bolt is projected, and the catch is drawn by the same key which has drawn the bolt, constructed and operated substantially as described.

PREPARING COTTON YARN FOR THE MANUFACTURE OF DUCK AND OTHER COARSE FABRICS—By H. N. Gambrill, of Baltimore, Md.: I claim the process described of preparing yarns for coarse cotton goods, but more particularly for cotton duck, by passing them through, between moistening rollers, or otherwise wetting them, and then passing them over or around grooved or plain heated steam pipes or rollers, for removing their elasticity, smoothing and condensing them, whilst in a state of proper tension, substantially as described.

ORGANS—By Albert and George Gemunder of Springfield, Mass.: We claim the use of a separate air chamber for supplying wind to all the pipes of a single stop, as described, and as opposed to the old method of having a single air chamber supply all pipes of the same note or letter in the different stops.

And finally, we claim the combination of air chambers such as are described, with valves communicating with the several pipes, and operated by mechanical agencies, such as are shown, substantially as described.

CARRIAGE AXLES—By Kingston Goddard, of Philadelphia, Pa.: I claim making the box in two or more parts, with a recess to embrace a collar on the journal part of the axle, or the equivalent thereof, substantially as described, when this is combined with the mode of securing together the section of the said box, by fitting it within the hub or pipe box, and securing it therein by a nut which embraces the several sections, and which secures them within the hub or pipe box, substantially as specified.

MOTION OF THE LAY IN LOOMS—By John Goulding, of Worcester, Mass.: I claim giving the lay of a loom one or more long beats for the shuttle to pass or to insert a wire into the web, and as many short beats as may be necessary or desirable to strike up each thread of weft and wire, with a toggle joint operated by a sweep or some other device connected to or operated by a crank cam or otherwise.

DERRICKS—By Selah Hill, of Jersey City, N. J., & C. H. Dupuy, Jr., of Rondout, N. Y: We claim placing the axis, upon which the jib swings, in a position deviating from the vertical, so as to cause the jib to have a tendency to swing in one direction, and applying the hoisting tackle, or part of the hoisting tackle, in any manner substantially as described, to the side opposite to the direction in which the jib tends to swing, so as to make the hauling on the said tackle, or part of the tackle, swing the jib in the opposite direction to that in which is its tendency to swing when left free.

PREPARATIONS OF ARCHIL—By Leon Jarosson, of New York City: I claim mixing and treating lichen rocellus with a volatile alkali, urine, and clear and fully saturated lime water, in the proportions and after the manner set forth, for the purpose of producing a coloring matter known as archil.

[The lime is all that is new in this; soda lye is better.—ED.]

JOINTING STAVES—By Edwin Jenney, of Middleborough, Mass., & David Rood, of Boston, Mass. (assignors to Edwin Jenney, of Middleborough, Mass): We claim, in combination with each carriage or frame, the clamping contrivance or mechanism by which such carriage is held firmly in position, after being moved outwards by a stave, and while such stave is being reduced on its edges, or has the bilge formed on it, such contrivance or mechanism consisting of the movable bar, the rocker bar, the lever, connecting rod, and the clamping lever, the whole applied to each carriage and made to act on it, as specified.

And in combination with the lever, as applied and operated in the manner above set forth, we claim the mechanism by which the fulcrum of the lever is caused to move longitudinally or towards the cam for the purpose of producing the effect, equivalent to shortening the rear arm of the lever, and lengthening the front arm thereof, whereby the cutter head is made to depart further from the middle of the machine, so as to increase the curve of the bilge, or make it, as it were, with a diminished radius, such mechanism being the stationary slotted plate underneath the carriage or frame, as arranged and made to operate essentially as described.

And in combination with the cutter, which produce the bilge curve, we claim the self adapting planes or plane irons, arranged in front of such cutters, and for the purpose of jointing or smoothing the edges of the bilge, as explained.

SADDLES—By Wm. S. Kennedy, of Philadelphia, Pa: I claim the employment of woven rattan, cane, whalebone, or other similar elastic substance, in the construction of the seats of riding saddles, said seats, so constructed, being attached to and combined with the saddle-tree, in the manner and for the purpose set forth.

WIRING BLIND RODS—By F. H. Moore, of Ithaca, Y.: I claim, first, the combining of clenching mechanism substantially such as described, with devices for feeding the rod and the wire, piercing the former, and severing, forming, and inserting the latter, whereby I make and firmly attached blind staples in their proper positions, substantially as described.

Second, I also claim the pivotted clencher, arranged and actuated substantially as described.

HANGING MILL SPINDLES—By Wm. H. Naracon, of Auburn, N. Y.: I claim the combination of the bail or balance rine (of the usual shape) with the cock eye of the spindle, by means of the inverted bearing cup, whose shank presses up through, and is made fast in the centre of the said bail, and whose head is enclosed in the inverted socket, which rises above and is made fast to the top of the spindle, substantially as set forth

BEDSTEAD FASTENINGS—By A. S. Newhouse, of Richmond Co., Ga: I claim securing the rail to the post, by means of a pin, key, and plate, in the manner substantially as set forth.

MEAT CUTTERS—By Jos. Potts, of Yocumtown, Pa: I claim the mode of attaching the knives described, by which they can be taken out and replaced expeditiously.

ORE STAMPERS—By Thos. Reaney, of Philadelphia, Pa: I claim the employment of weights upon the stamper, substantially as described, to keep up a uniformity of weight as the stamper wears, as set forth.

HAND SEED PLANTERS—By Gelston Sanford, of Ellenville, N. Y.: I claim the method of conveying seed from the seed box, and depositing it in the furrow or hill, substantially as described, viz.: by having the rods attached in any proper manner to a staff said staff and rods passing vertically through the bottom of the said box, the upper part of the rods having cups attached to them by elastic joints, the cups having spurs projecting from them, which cant or turn over the cups, when the staff and rods are raised, and throw the seed into the tops of the tubes, when they catch under the projections, the lower ends of the rods forcing out the seed from the tubes when the staff is depressed, and the springs retaining it when the staff is raised.

HARVESTERS—By Wm. & Thos. Schnebly, of New York, City: First, we claim the arrangement of the bridges beneath the platform, in combination with chain bands, having accommodating knee-formed fingers or rakes, working on pivots and attached thereto, substantially as described.

Second, we also claim working the vibrating cutter between an under and an upper open guard or finger, as described.

LABEL CARDS—By James Sharp, of Roxbury, Mass.: I claim the manufacture of label cards or tickets of cloth and paper, stuck and pressed together, substantially as described.

MAKING CORDAGE—By David Perry, of Fredericksburgh, Va. (assignor to F & J. W. Slaughter): I claim, first, the arrangement and combination of the parts by which the machine is enabled to stop itself when the sliver becomes exhausted, or nearly so, in any of the cans, viz, by means of the movable bottoms within the cans connected to the rod, which pass through the tubular journals of the can frames, and descend below the disc, the arm fixed near the centre of the spring shaft, and the arm fixed near the projecting end of the said shaft, and the arm projecting from the side of the machine; or the respective equivalents of the said parts, when arranged combined, and operating with each other and with the fixed pulley, and the loose pulley on the shaft, substantially in the manner set forth.

Second, I also claim the corrugating of the sides of the cans, to prevent the sliver from rising therein, when it is pressed into the same, by which a much larger quantity of sliver can be placed in them than can be placed in cans of the usual form.

Third, in combination with the said corrugations in the sides of the cans, I also claim the perforating of the sides of the same, for the purpose of allowing the air to escape therefrom, when the sliver is compactly pressed into the cans.

Fourth, I also claim the inserting of a wing or wings into each of the cans, for the purpose of preventing the combined annular and rotary motion which is imparted to the cans from twisting and kinking the slivers, as they rise therein, to the upper tubular journals of the can frames, substantially as set forth.

SEWING MACHINES—By A. B. Wilson (assignor to N. Wheeler, A. B. Wilson, A. Warren & E. P. Woodruff), of Watertown, Conn.: I claim, first, the combination of the bobbin for carrying one thread, with a rotating hook, which is of such form, or forms part of a disc, or its equivalent, as to extend the loop on the other thread, and pass it completely over the said bobbin, whereby the two threads are interlaced together, the parts being arranged and operating in any way substantially as set forth.

STAMPING ORES—By Virgil Woodcock, of Swanzey, N. H.: I claim the combination and arrangement of the said arc of cogs and its wheels, the two spur wheels the shafts thereof, the drums, straps, frames, their catch levers and disengaging cams, the whole being applied to the two weights or rams, and made to operate or alternately raise them, disengage them, allow them to fall, and afterwards re-engage them all, as specified.

And in combination with the two spur gears and the arc gear, I claim the cam on the wheel, the two spring catches, and the two pins or studs all arranged, applied and made to operate substantially as specified.

FRICTION CLUTCH—By Wendall Wright, of New York City: I claim operating the segments for producing friction on the inner surface of a loose pulley by means of a thimble on the shaft of the pulley connected with segments by diagonal rods or braces, substantially as described.

DETACHING HARNESS FROM HORSES—By George Yellott, of Bel Air, Md: I claim the manner of constructing the hames, the saddle-tree guard, and stop, as described so as to enable the driver, at any time, to detach the horse or horses from the harness and buggy, carriage, or other vehicle, by a single pull, or jerk of a cord.

Remarkable Voyage in the Air.

John Wise, of Lancaster, Pa., made his 131st aerial voyage from Portsmouth, Ohio, on the 3rd inst. His balloon voyage was a remarkable one, and the grandest he ever performed, sa far as magnificent sights are concerned. He ascended a little after 4 o'clock in the afternoon, and soon rose to an elevation of 2,000 feet. While slowly sailing along at this elevation, by the range of a hill in Kentucky, three rifle shots were fired at him, one struck the car, but so very lightly that it did no harm. He believes the striking part was mere chance. Those who fired the shots, we have no doubt, did not imagine that there was a person in the balloon. Some exceedingly useful meteorological information was obtained by Mr. Wise in his voyage. These he states are as follows:—

1st. Thunder storms have two plates of clouds, the upper discharging the contents, whatever it may be, rain, hail or snow.

2d. Sheet lightning of an orange color undulates silently between the upper and lower cloud, in a waving motion.

3d. The discharges of electricity take place in the lower cloud, (by discharges are meant thunder and lightning.)

4th. The distance between the upper and lower cloud is not less than 2,000 feet, (this is mere eye measurement.)

5th. The uprising current was not continued higher than the lower cloud, and was rising and whirling as long as I was in the margin of the storm, being in it twenty-five minutes.

6th. The storm was much wider below than above, and the deposite diverging at least 25 deg. from a perpendicular line.

7th. The deposition of hail and rain was thickest in the centre of the storm. I could not, of course, look through it, but I viewed one from its front, the other from behind its line of direction, and they both appeared the same.

8th. Under the shadow of the upper cloud it is very cold, and in the lower cloud it is quite warm.

9th. The upper cloud was moved by the current which always blows from west to east.

10th. Other causes than the upper current may affect the horizontal course of thunder storms so as to increase or diminish their violence.

I might deduce some data from what was so distinctly observed on this occasion, but will for the present leave that to abler heads, and particularly to Prof. Epsy and the Smithsonian Institution.

Mr. Wise enjoyed the grand and terriffic spectacle of looking down upon a war of the elements upon a scale of grandeur far surpassing Waterloo. We advise Prof. Epsy and Dr. Hare to make a number of aerial voyages to settle their disputes. We think it would be a grand plan for them; much better than writing and printing long papers on the subject. Let them get up into the regions above along with Mr. Wise, and make observations. This point might be very useful to the Smithsonian Institute in getting meteorological information.

Lightning plays strange freaks. On the 15th inst. the Congregational Church, in Thompson, Conn., was struck and badly injured. The telegraphic wires, which pass within a rod or two of the church, seem to have had considerable influence upon the fluid. Two of the posts which sustain the wires were split, and the wires for some distance thrown to the ground. The lightning rod of the church, by some accident, had been thrown out of place.

Extension of a Patent.

On the petition of John Brown, of Stonington, Conn., praying for the extension of a patent granted to him for an improvement in gaffs of sailing vessels, for seven years from the expiration of said patent, which takes place on the 31st of Dec., 1852

It is ordered that the said petition be heard at the Patent Office on Monday the 26th of July, 1852 at 12 o'clock M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not to be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specifically set forth in writing, at least twenty days before the day of hearing; all testimony filed by either party to be used at the said hearing, must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

THOS. EWBANK, Com. of Patents.

Washington, June 14, 1852.

Tunnelling the Hoosack.

A correspondent of ths Springfield Republican, of the 14th inst, gives the following account of the state of operations at the projected Hoosack tunnel:—The boring machine is on the ground, but as yet hardly resolved into its component parts. A mass of cast iron spokes, cogs, wheels, shafts, belts, &c., &c., lay around us, out of which the workmen were slowly (for nearly every piece required a derrick and pulleys to get it into place) re-constructing the ponderous wonder. The carriage for operating the machine is in place, facing a perpendicular side of solid rock, just off the actual line of the road, which has been prepared for the first actual experiment. The immense shaft was being hoisted into position, and then would come the wheel and its accompaniments, and then the driving power, which consists of engines of one hundred horse power, and for which a building was being erected. There have been many delays in getting the machine upon the ground, and in place, and we are told it would probably be six weeks at least before everything would be ready for a start.

Machine for Turning Irregular Forms.

We understand that Thomas Blanchard, of Boston, has assigned his patent for turning spokes, lasts, gun stocks, and other irregular surfaces, to the Hon. James M. Quimby, Mayor of Newark, N. J., and proprietor of the celebrated coach manufactory of that place, for a good round consideration, and that the purchaser is so well pleased with his bargain, he has presented the lady of Mr. Blanchard one of his best family coaches. Several have written us of late respecting this machine, and the above will furnish information not in our possession heretofore.

American and British Ships—A Challenge.

The Boston Atlas states that two or three Boston ship-owners have sent a challenge to the ship owners of Great Britain, somewhat to the following effect:—The Boston parties will produce a ship, not less than 800 nor over 1,200 tons register, to compete with any vessel of the same capacity, now built, or which may hereafter be built in Great Britain; the winning party to receive £10,000, and the race to be a voyage to China. This will put the British shipwrights to their metal.

Nautical Enterprise.

Among the miracles of navigation, in these days, deserves to be mentioned that a schooner of 150 tons is to leave Port Stanley, on Lake Erie, for Australia direct, in August; she is to be fitted up in yacht style, and it is deemed that she is quite adequate to the voyage that she is to undertake. She will pass through the Welland Canal into the St. Lawrence, and out of the St. Lawrence into the Atlantic. Whether the Port Stanley people intend to run a regular line to Australia we are not informed.

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TO CORRESPONDENTS.

A. H., of Geo.—Upon receipt of the model we shall proceed with your business with as little delay as possible.

J. W R., of N. Y.—Hollow grate bars, for feeding the water through them to the boiler, are not new; if you look on page 204, Vol. 3, Sci, Am., you will find them illustrated and described.

J. R. M, of Fla.—Your subscription will not expire until the 15th of Sept next.

W. A G, of Va.—We do not think the "Model Calculator" would prove of any especial value to your profession. $2 received on account of another year's subscription.

J. W. D, of Geo.—We think you can obtain the mill stone shaft from Messrs. Logan, Vail, & Co., No. 7 Gold st, this city. They deal in all kinds of mill gearing. $2 received.

J. C. S, of N. Y—An application was made for an extension and re issue of Langdon's patents, one for planing boards, the other for shingles. They were both rejected on the 20th of February, but the parties interested were dissatisfied and submitted an argument for a re-examination, on the 4th of May they were again rejected—we think very justly. He claimed that which was not found in his original models or papers. The application was a singular one, and shows how far designing men will go sometimes.

J. H E., of Tenn.—Your favor of the 11th inst. came duly to hand, and will command early attention.

H.C.T., of S.C.—Glad to learn of your success with the protector, and shall hope to hear from you again.

J M, of Ohio.—Messrs. M. & J. H. Buck., of Lebanon, N. H.. can furnish you with such a mortising machine as you enquired for.

J. E., of R. I.—It is probable that your improvement in looms for weaving counterpanes is new, we cannot, however, decide fully without a sketch.

F. B. H., of Ind.—The model we have returned to you at Indianapolis.

J. H. D., of N. Y.—The employment of a balloon to aid in sustaining a boat is an old exploded idea. No good can come out of it.

J. M., of Ohio.—A machine to peg boots and shoes would be valuable, providing it could be made effectual and cheap. We understand that machines for that purpose are in use in the Eastern States, but do not hear much of their practical character. We have no volumes back of the sixth. Price of Vol. 6 bound, $2.75.

W. W B, of Wis.—There is an instrument named the *anemoscope* for measuring the velocity and consequently the pressure of the wind. We have never known of it being used on shipboard, but it could be used. The velocimeter is an old instrument. You will find an engraving of the wind measurer on page 46, Vol. 6, Sci. Am.

V. E. R., of Ill.—We think your mill is new and patentable, and advise you to send a model.

L. D., of N. Y.- There is nothing at all new in the suggestion of pressing at both ends of a bale of hay or cotton. It has often been suggested.

W. B S, of N. H—It has been proposed to employ an india rubber bag in the air chamber. We have seen one used. It is best to have the chamber air-tight, and there is no necessity for any diaphragm.

D. T., of Canada—Mr. Scott's subscription has expired. You Canadians must not forget that it costs us 1 1-2 cents postage on every paper which we send into Canada, and that such amount has to be abstracted from your remittances. $2 pays for only 40 numbers when sent over the line into John Bull's dominions.

A. A., of N. H.—You mistake the centrifugal force and consider it different from the applied force; it is the applied force, and there is no such a thing as centrifugal force when the body is moving in a straight line.

N. B,, of R. I.—We are not familiar with the arrangement for drying mentioned in the Cultivator, and can give no advice upon the subject.

O L R, of Geo.—We cannot advise you to file a caveat. When the model is finished send it on, of course we shall do the best for you we can.

S. S., of Ohio.—We do not apprehend any difficulty in getting a patent on the combination as set forth in section third of your drawing. It is totally different from Mr. Brown's invention.

G. M, Jr., of Ill—You would see something about the extra bow in our last number, it is, however, very different in principle from yours. The principle of applying the air as a medium under the boat, was tried by R L. Stevens, of this city, a few years ago; it was a failure, yours is a better plan, however, we think more favorably of it.

C. A. M., of Mass.—M. Roucher finds that calcined magnesia, if administered in time, is an efficacious remedy for poisoning by sulphate of copper. Eight parts at least of magnesia are required to one of the sulphate.

W. S, of Conn.—The common garden rhubarb contains a considerable amount of oxalic acid, and may not be regarded as a healthy diet. Its use, however, is limited

D. S., of Ohio—Dr. Wright, of Cincinnatti, published a communication in Vol. 6, Sci. Am, in which he recommends coal tar as a good substiteut to be employed in removing incrustations. It deprives the water of its saline matter.

R H., of Miss.—In volume six, of the Sci Am., we published an illustrated series of articles on the water wheels. No doubt the information will be useful to you. The volume bound costs $2,75.

E. S. P., of Va.—Your paper has been regularly sent since the receipt of your funds, and we cannot define a reason for its not reaching you properly.

Money received on account of Patent Office business or the week ending Saturday June 19:

A R., of Mass., $20; S. A. C., of Ct., $50; P. B, of N. Y., $55; C. G. B., of N. Y, $30; N. G. D., of L. I., $30; J. W, of Pa, $50; E. & Co., of N. Y., $40; P McK, of N. Y., $70; G & S., of N. C., $20; S. I, of N. Y, $60; J. J. H., of N. Y, $20; F. C. S., of L. I., $30; C. W., of Ct., $20; J. F. M., of Pa., $30; S. W., of Ill., $10: D. P., Jr., of N. Y., $55; B. H M., of Ind., $32; W. S., of Pa, $20; H. M., of N. Y., $3,000.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, June 19:

A. R. of Mass: J. R., of N. Y.; P. McK, of N. Y.; A. M. G., of S. C; J. W. H., of N. Y.; J. J. H, of N. Y.; J C, of Ohio; B. H. M, of Ind.; W. S, of Pa.; C. M. M., of Pa.

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MACHINERY IN THE GREAT EXHIBITION—22 Copperplate Engravings of the following subjects and numerous Woodcuts, are given in the Volume of the ARTIZAN for 1851, price $3.50: Retort Settings (Croll's Patent) and Wet Lime Purifiers, for the Great Central Gas Works; Comparison of recent Improvement in Permanent Ways; Ryder's Forging Machine; Brown's Blooming Machine; Curvilineal Planing and Shaping Machine; Ericsson's Caloric Engine; Hydraulic Mine Lifting Machinery; Pumping Engine, by M. Mazeline; Samuel's Locomotive Feed Engine; Galloway's Patent Smoke-Consuming Water-Tube Boilers and Engines; Shipton's Pendulous Engine; Details of the Emperor of Russia's Yacht "Peterhoff," by Messrs. Rennie, and of the Prussian War Steamer "Nix," armed on Mr. Scott Russell's Patent System; Carlson's Direct Acting Engines for the Screw; Long's Steering Apparatus; Details of a Swedish Ornamental Villa; Wigington's Model Dwellings, ventilated on the best principle; large sheet of Designs for Architectural Ornaments in Fire-clay; Result of Experiments of the Commission on the Strength of Iron

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MARYLAND INSTITUTE FAIR—The Board of Managers of this Institute will hold the Fifth Annual Exhibition in the Grand Saloon of the Institute Building, in the city of Baltimore, commencing on the 4th day of October next. The great facility thus afforded for a splendid display of American Manufactures, they hope, will be a sufficient inducement for the Manufacturers, Mechanics, Artists, Inventors, and others throughout the United States, to contribute such specimens of their industry, skill, and ingenuity, as shall be alike honorable and creditable to the mechanical genius and refined taste of the country. The Hall will be open for the reception of goods on Monday the 27th Sept next, from which time to Thursday night, Sept. 30, articles intended for competition and premium must be deposited. The balance of the week will be devoted to the reception of articles intended for exhibition only, free of charge After which time depositors will be subject to a charge of 50 cents to $1. On Monday, Oct. 4, at 7 o'clock, P. M., the Exhibition will be open for the reception of visitors. Circulars containing the regulations and arrangements established by the Standing Committee on Exhibitions, can be had by addressing (post-paid) JOHN S. SELBY, Actuary of the Maryland Institute, by whom any information required will be promptly given. 39 7

PATENT ALARM WHISTLE—Indicators for speaking pipes, for the use of hotels, steamships, factories, store-houses, private dwellings, etc. etc. This instrument is intended to supersede the use of the bell, being more simple in its arrangement, more effective in its operation, and much less liable to get out of order, being directly connected with the speaking pipe, it requires no lengthy wires in its use, which are continually getting out of order or breaking. There have been several hundreds of them fitted up in this city and vicinity with the greatest success. They can be attached to pipes, which are already fitted up without damage to buildings, and for much less than the cost of a bell, and warranted to operate. The public are invited to call and examine them at the factory of the patentees.

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TO CARPENTERS AND DEALERS IN PATENT RIGHTS—The whole right and title to the Patent Blind and Shutter Fastener, which was illustrated in No. 37 Vol. 7 of the Scientific American, will be sold cheap to a cash customer, or the owner of the patent will sell single States (not in smaller quantities) if desired. The invention is a good one; the claims are broad, and it is not an infringement of any existing patent, as decided by parties who have investigated the matter thoroughly. For particulars concerning the purchase of rights, etc., address "DESAIX," box 773, P. O., New York City. 413*

LATHES FOR BROOM HANDLES, Etc.—We continue to sell Alcott's Concentric Lathe, which is adapted to turning Windsor Chair Legs, Pillars, Rods and Rounds; Hoe Handles, Fork Handles and Broom Handles.

This Lathe is capable of turning under two inches diameter, with only the trouble of changing the dies and pattern to the size required. It will turn smooth over swells or depressions of 3-4 to the inch and work as smoothly as on a straight line—and does excellent work. Sold without frames for the low price of $25—boxed and shipped with directions for setting up. Address (post.paid) MUNN & CO.

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BEARDSLEE'S PATENT PLANING MACHINE, for Planing, Tonguing and Grooving Boards and Plank.—This recently patented machine is now in successful operation at the Machine shop and Foundry of Messrs. F. & T. Townsend, Albany N. Y.; where it can be seen. It produces work superior to any mode of planing before known. The number of plank or boards fed into it is the only limit to the amount it will plane. For rights to this machine apply to the patentee at the abovenamed foundry—or at his residence No. 764 Broadway; Albany. GEO. W. BEARDSLEE. 23tf

MACHINERY.—S. C. HILLS, No. 12 Platt-st. N. Y. dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills; Kase's, Von Schmidt's and other Pumps; Johnson's Shingle Machines; Woodworth's, Daniel's and Law's Planing machines; Dick's Presses, Punches and Shears; Morticing and Tennoning machines; Belting; machinery oil, Beal's patent Cob and Corn mills; Burr mill and Grindstones; Lead and Iron Pipe &c. Letters to be noticed must be post-paid. 26 tf

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A. B. ELY, Counsellor at Law, 46 Washington st., Boston, will give particular attention to Patent Cases. Refers to Munn & Co., Scientific American. 13tf

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NEW HAVEN MANUFACTURING COMPANY, Tool Builders. New Haven, Conn., (successors to Scranton & Parshley) have now on hand $25,000 worth of Machinist's Tools, consisting of power planers, to plane from 5 to 12 feet; slide lathes from 6 to 18 feet long; 3 size hand lathes, with or without shears; counter shafts, to fit all sizes and kinds of universal chuck gear cutting engines; drill presses, index plates, bolt cutters, and 3 size slide rests. The Co are also manufacturing steam engines. All of the above tools are of the best quality, and are for sale at 25 per cent. less than any other tools in the market. Cuts and list of prices can be had by addressing as above, post-paid. Warehouse No 12 Platt st., New York, S. C. HILLS, Agent N. H Man'g Co. 25tf

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SCIENTIFIC MUSEUM.

Longmaid's Improvement in Separating Metals from their Ores.

A very interesting paper was read before the London Society of Arts in their last meeting in April last, on Longmaid's Process for Separating Metals from their Ores.

When common salt and minerals containing silver, copper, iron, and sulphur, are mixed together, and exposed to the combined action of heat and atmospheric air, mutual decomposition ensues, with formation of sulphate of soda, and chloride of silver and copper, soluble in the alkaline solution thereof. Mr. Longmaid has further discovered that every description of ore containing silver and copper might be treated with great advantage by various modifications of these processes, and the silver and copper economically obtained. The waste of sulphur annually destroyed in the copper works of Great Britain, at an enormous cost of labor and coal, was stated to be from 60,000 to 70,000 tons annually. From this, the original idea was to manufacture sulphate and carbonate of soda. Taking the metals as incidental products in the original process, objections had arisen to its application to ores rich in copper. These were now obviated; and the period was confidently looked forward to when it would be applicable to copper ores generally. The chief points adduced by Mr. Longmaid are, the complete separation of silver and copper, and also lead, when these metals exist in the ore; and the great economy of the process, whereby the sulphur is rendered available for the manufacture of alkali. His late patent refers to the application of the process to ores rich in copper and silver; ores containing about 25 per cent of sulphur, and from 5 to 10 per cent. of copper, are mixed in such proportion that 32 parts of sulphur by weight are added to 100 parts of common salt. The mixture is ground sufficiently fine to pass through a ten-hole seive, the material is then calcined in a furnace of four or five beds, commencing at that farthest from the fire, and gradually being advanced by stages to a greater heat; the charge is finished at the bed nearest the fire; the calcined mass, which is called sulphate ash, is conveyed to suitable vats, in which the soluble portions are dissolved, and consist of sulphate of soda, and chlorides of silver and copper. In the rude process of smelting copper ores, as at present practiced, the sulphur of the ore is not only wasted, but a considerable degree of fuel and labor is employed to destroy this valuable product. The great objection which has hitherto retarded the introductiou of these processes into the copper-smelting works arose from a variety of causes. It could only be used practically on a large scale; the copper-smelters were wedded to a practice by which they had realized such enormous profits, they regarded with distrust schemes which they did not understand, and they had a foolish prejudice against becoming alkali manufacturers; neither could the ordinary copper-works be readily converted into furnaces and apparatus for the patent processes; but the astounding fact that the smelters are destroying property to the extent of 50 per cent. on the value of the ore in their present operations, must sooner or later force these improvements into general use.

Carbonic Acid Gas and the Atmosphere.

Throughout the whole atmosphere there is distributed a small portion of carbonic acid gas. It is derived from springs, volcanoes, the respiration of animals, plants, and we might also say inorganic matter in a state of change, such as limestone when burning, and from all matter in a state of combustion.—When mixed with water, it possesses great solvent powers. It disintegrates the hardest granite rock; pure cold water has no effect in decomposing rocks, but when mixed with carbonic acid it becomes a powerful solvent. This has been demonstrated in a most beautiful manner by our eminent countrymen, Professors Rogers, they found no description of rock that would not yield to water when impregnated with carbonic acid gas. The fact that bodies will not burn in carbonic acid, nitrogen, or hydrogen gas, but will when combined with oxygen, has given rise to a classification, by which bodies that produce combustion are termed supporters of combustion, and those which waste away are considered as combustible—hence atmospheric air is taken to be a supporter of combustion. These terms are very convenient, and, when properly applied, will lead to no error; but it is now ascertained that there is no difference between supporters of combustion and combustible bodies, which mutually operate on each other, and which act reciprocally as combustible bodies, and supporters of combustion, but strictly speaking, oxygen is well denominated "the great supporter of combustion." When we examine the structure of the earth, however, and view the materials of which its surface is composed—whether of rocks that rise in walls or twining veins, we find that the whole has been produced by the combustion of oxygen, and some other bases with which it has combined.

This explains the part which oxygen performs in changing the surface of the globe, and to which is to be attributed the reddish color of soils and rocks. That this process is still going on, is made more manifest from the consideration that nearly all hot springs point to the fact that water and atmospheric air find their way into the interior of the earth, which is indicated by the numerous apertures on its surface.

IMPROVED SIGNAL LIGHTS.

Figure 1. Figure 2.

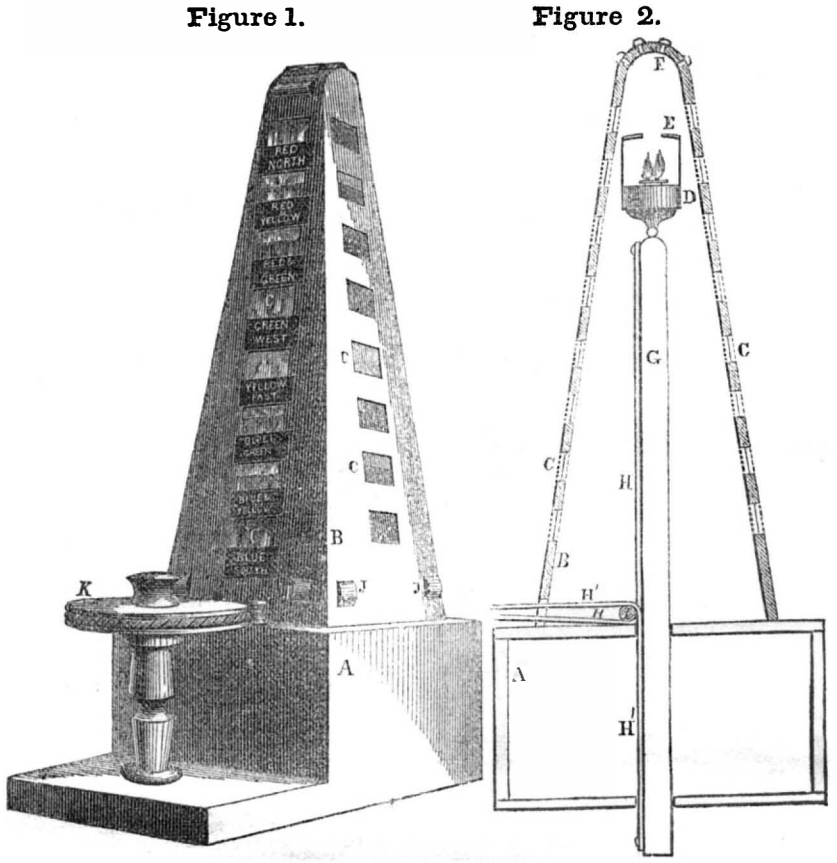

Fig. 1 is a perspective view and fig. 2 a vertical section of an improvement in Signal Lights for vessels at sea, and other purposes, to be used at night and for other purposes. The same letters refer to like parts. The inventor is Thomas H. Dodge, of Nashua, N. H., as noticed by us last week. This is an improvement on his already-patented Marine Signal Light, which was illustrated on page 145, this volume Scientific American.

A is the base of the signal box. The signal box is a hollow pyramid, B, having a number of colored glass windows on every side, extending from the top to the base; C represents the side glass lights; D is a lamp which is made to move up and down on a pedestal in the hollow pyramidical box. The light is exhibited on the whole four sides of the signal box. There is a reflector, E, above the lamp, and one placed on the upper surface of the lamp, so that the light will be thrown full upon the colored glass windows immediately opposite the flame in a horizontal line. Slides above the flame and under it, so as to leave a window open on every side, may be made to move up and down with the lamp on arms, so as to close all the windows except the four opposite the flame. The different colored glass lights are signals to tell which course the vessel is steering. At the top, the signal light is red, which indicates the north course of the vessel. The light below is a mixed one, composed of one half of red plate glass, and the other half plate yellow glass, for a nor'-west course, and so on for the course of the vessel, whether it is steering north, south, east, or west, the course will always be indicated by the colored light or lights of the signal. The lamp is elevated and lowered by a very simple arrangement. I is a horizontal pulley; on its surface the courses E., W., N., S., &c., may be marked out like a compass. A cord, H H', passes around the groove of this pulley, and one end is secured to the lower part of the sliding pedestal, G, and the other end to the top of this pedestal. When the pulley is moved round in one direction, it will elevate the pedestal and lamp, and when moved round in the contrary direction, it will lower the lamp. The lamp can thus be elevated and lowered to be brought always opposite the colored glass window which will indicate the course of the vessel. The box has a door to allow the lamp to be taken out and put in as required. J J are lugs to lift off the whole pyramidical box when required. The cord which works the lamp pedestal is guided over a small horizontal barrel, I, and small vertical pillars sustain it in its motion; F is the ventilating top of the signal box.

This signal is very simple, and can be constructed at no great cost. It will not be affected with water nor the motion of the vessel. In cases of distress the signal may be frequently changed, or some other plan upon the same principle adopted. The precise colors indicated above are not to be understood as embracing the whole principle, for colored glass figures may be used in place of plain glass, and other modifications may be adopted.

This apparatus we commend to our railroads for a night signal. It can be erected at a small cost at every station, and by running the lamp up or down in the simple manner illustrated in the engravings; signals of danger or safety can be conveyed to approaching trains. As a night signal for almost every purpose it is the most simple we have seen, and it will at once commend itself. Mr. Dodge has made application for a patent, and more information may be obtained from him by letter.

Gum Arabic.

In Morocco, about the middle of November that is, after a rainy season, which begins in July, a gummy juice exudes spontaneously from the trunk and principal branches of the acacia tree. In about fifteen days it thickens in the furrow, down which it runs, either in a vermicular (or worm) shape, or more commonly assuming the form of oval and round tears, about the size of a pigeon's egg, of different colors, as they belong to the white or red gum tree. About the middle of December, the Moors encamp on the borders of the forest, and the harvest lasts six weeks.

The gum is packed in very large sacks of leather, and brought on the backs of bullocks and camels to certain ports, where it is sold to the French and English merchants. Gum is highly nutricious. During the whole time of harvest, of the journey, and of the fair, the Moors of the desert live almost entirely upon it, and experience has proved that six ounces of gum are sufficient for the support of a man during twenty-four hours.

LITERARY NOTICES.

SPOHR'S GRAND VIOLIN SCHOOL.—This is a large work, revised from the latest German and English editions, and edited by the distinguished U. C Hill. This work contains complete instructions, and embraces the best elements of music for the violin. The violin, as a musical instrument, is the most difficult of all instruments to master, if indeed it can be mastered; it is a dwarf in stature but a giant in power, and we like it better than any other instrument when the performance on it is good; on the other hand, it tries the temper to hear mere scrawlers on the cat-gut. It is very necessary that those who wish to learn the violin should commence right; this is the best work extant for that purpose It is published by Oliver Ditson, Boston, and J. E. Gould & Co., this city.

POETICAL WORKS OF FITZ-GREENE HALLECK: 1 Vol., 12mo.; J. S. Redfield, publisher; Clinton Hall, N. Y.—Mr. Redfield is now furnishing the public with a series of publications of a rare and valuable character, several of which we have already noticed in our columns. The volume before us is made up in faultless style, and adds another testimonial to the well-earned character of the publisher, and we feel assured that the public will seek with interest the poems of Halleck, a name long since celebrated at home and abroad, a distinguished author and cotemporary of Bryant, Cooper, and Irving.

The July number of Graham's Magazine is a perfect gem, and is deeidedly creditable to the cultivated genius of its publisher. Aside from its brilliance as an illustrated and well edited serial, we should not omit to mention the letter press, as a superb specimen of the art typographical. The present number commences a new volume. Terms, $3 per annum. Dewitt & Davenport, agents, N. Y.

MANUAL OF GEOGRAPHICAL NAMES: by A. J. Perkins and G. W. Fitch: published by Geo. Savage, 22 John st., N. Y.—The design of this volume is to furnish teachers and scholars the etymology of the scientific terms used in the study of geography, and to explain their meaning. It is an instructive little book of over 60 pages.

SARTAIN'S MAGAZINE, for July, is a fine number, it embraces a series of pictures illustrating the life of Gen. Jackson, besides others of less merit; it covers 112 pages of well prepared letter press, and is, on the whole, the best number ever issued of this work. Dewitt & Davenport, agents.

The "North American Miscellany and Dollar Magazine," for June, is received from the publishers, Messrs Angell, Engel & Hewitt, New York. It is a cheap and excellent magazine, and deserves patronage.

BEN BRACE—A Nautical Romance; by Captain Chamier, author of "The Life of a Sailor," etc.: price 50 cts, just issued by Messrs. H. Long & Brother, 43 Ann st.

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